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*Bibliography of*  
**air raid precautions  
and civil defense**

VOLUME THREE



**WORK PROJECTS ADMINISTRATION  
DISTRICT OF COLUMBIA**

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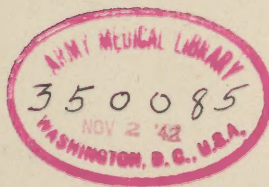
U.S. WORK PROJECTS ADMINISTRATION

BIBLIOGRAPHY OF  
AIR RAID PRECAUTIONS  
AND  
CIVIL DEFENSE

Prepared by  
District of Columbia  
Air Raid Precautions Bibliography Project  
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# War Coll. Civilian Act.

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May 14, 1942

The third volume of the BIBLIOGRAPHY OF AIR RAID PRECAUTIONS AND CIVIL DEFENSE is a splendid piece of work which it is hoped will be useful as a comprehensive guide. Upon the basis of it more select lists may be made by those interested in special phases of the subject. A comprehensive subject index adds to the convenience of using the volume. The Library of Congress has been glad to sponsor the Bibliographical Unit and to lend its facilities for this important work. The Work Projects Administration is to be commended for its foresight in anticipating the need for such important information and in taking the initiative to see that it is made available.

Luther H. Evans  
Acting Librarian of Congress







## INTRODUCTION

The third listing of the Bibliography of Air Raid Precautions and Civil Defense was prepared at the Library of Congress by the Air Raid Precautions Bibliographical Unit of the District of Columbia Work Projects Administration.

This listing of previously unpublished material contains an index of subjects and authors and two appendices. Appendix A lists serials consulted, giving for each the name and place of publication, the first date of publication, the frequency of publication, centimeter size of publication and, where possible, the call number of the Library of Congress. Appendix B lists similar information for books, pamphlets, and government releases.

With respect to the Slavic material the rules of transliteration are those suggested by the Library of Congress.

The location symbols for libraries used in this and the preceding issues are as follows:

DLC	The Library of Congress
DSG	The Library of the Surgeon General
DPR	The Library of the Department of Public Roads of the Federal Works Agency
DARC	The American Red Cross Library
DAPH	The American Pharmaceutical Association Library

The digests covering the Building Science Abstracts listed in this issue and in Volume IV, to be released in the near future, are from the Building Research Station, Department of Scientific and Industrial Research, London, H.M.S. Office.

Special thanks are due the Honorable Archibald MacLeish, Librarian of Congress, and Dr. Luther H. Evans, Acting Librarian of Congress for their continued interest and cooperation.

Mr. R. D. Jameson, Administrator of the Consultants' Service, Library of Congress, has been very generous with his assistance. We wish expressly to thank Mr. George Novossiltzeff and Dr. Otto Neubeurger, Assistants in the Documents Division for their help.



We also thank the Civilian Defense Volunteer Bureau through whose offices the following volunteers have worked on Volume III: Elizabeth Hawthorne Buck, L. O. Richter, Mrs. Peter Belin, Mrs. Brootzkoos, Mrs. H. M. Brown, Miss Helen Conover, Ursula Crowley, Mrs. P. S. Kaidanosky, Mr. Sidney Jacoby, Mrs. V. Kolesnikoff, and Mrs. D. A. Rosenthal.

Thanks are also due Dr. E. F. Kelly, Executive Secretary of the American Pharmaceutical Association; and Mrs. Esther Jones, Librarian of the American Pharmaceutical Association.

William W. Schwartzmann



## ERRATA

- Item 4274, p. 7, line 9 should read "utilization".
- Item 4282, p. 11, line 11 should read "distributed".
- Page 11: Heading "Automobiles, See Transportation, Automotive" should read "Automobiles, See Transportation, Automotive and Other".
- Item 4288, p. 13, line 2 should read "Handbuch".
- Item 4333, p. 26, line 9 should read "outside".
- Item 4338, p. 27, line 16 should read "are".
- Page 27: Heading "Bomb-Proof Shelters, See Shelters, Bomb-Proof" should read "Bomb-Proof Shelters, See Shelters".
- Item 4342, p. 28, line 1 should read "destruction".
- Item 4367, p. 37, line 14 should read "Panamas".
- Item 4555, p. 104, line 19 should read "air raid".
- Item 4574, p. 115, line 7 should read "competitions".
- Item 4574, p. 115, line 1 should read "4575".
- Item 4589, p. 121, line 5 should read "(DAPH)".
- Item 4621, p. 133, line 5 should read "sandbags".
- Item 4623, p. 134, line 12 should read "rescue".
- Item 4624, p. 136, line 6 should read "1940".
- Item 4624, p. 136, line 21 should read "thorough" instead of through.
- Item 4624, p. 137, line 18 should read "If at all...".
- Item 4626, pp. 139, 140, 141, "stirrup pumps" should be substituted for "hand sprays" and "hand squirts".
- Item 4626, p. 141, line 1 should read "extinguishing".
- Item 4627, p. 142, line 14 should read "atmosphere".
- Item 4634, p. 145, line 19 should read "compressed".
- Item 4634, p. 145, line 19 insert "used" after "also".
- Item 4664, p. 162, line 7 should read "1935".







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## AGRICULTURE

4249. British advise farmers on protection of crops.  
SCIENCE NEWS LETTER (Washington, D.C.)  
1941, October 25, Vol. 40, No. 17, p. 264.  
To minimize danger of air attack, farmers have been advised by the British government to plow stubble fields immediately after harvest; otherwise fires from incendiary bombs in these fields would spread to grain in nearby barns or haystacks. (DLC)
4250. Kolkhoz-Krepost' oborony. (Collective farms the stronghold of defense)  
Likhter, A.  
KHIMIYA I OBORONA (Moscow)  
1938, July, No. 7, pp. 14-15, illus.  
Description of a large collective farm "Beloomut" of the Moscow region, and of its ARP work. The ARP groups of the farm were organized as far back as 1936 and have grown into a strong unit during the past few years. (DLC)

## AIR RAIDS - MENTAL AND PHYSIOLOGICAL EFFECTS.

4251. Air raid noise not likely to harm nervous system cells.  
SCIENCE NEWS LETTER (Washington, D.C.)  
1940, November 2, Vol. 38, No. 18, p. 278.  
An intensive study made by Dr. Morgan of the possible effects on the nervous system of loud noises like those of explosions or screaming bombs. Reports results of experiment on rats. (DLC)
4252. Air raid noise in psychotherapy.  
Mackwood, J. C.  
THE BRITISH MEDICAL JOURNAL (London)  
1941, August 23, Vol. 2, No. 4207, p. 279.  
In commenting on the writing of Majors F. L. McLaughlin and W. McMillan on neurasthenia resulting from air raid noises, the author states that artificial noises are being used as a part of the treatment. The use of any method to produce a reaction is not merely to "detension". In order to substitute a new reaction to stimulus and response, an investigation of the experiences of earlier life must be made. (DSG)



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4253. Employment of air raid noises in psychotherapy.  
 Mc Laughlin, F. L.  
 THE BRITISH MEDICAL JOURNAL (London)  
 1941, August 2, Vol. 2, No. 4204, p. 158.  
 The treatment of neurotic breakdown caused by unaccustomed stress of noises is impeded by too quiet an environment in hospitals. Apparatus for reproducing noises is used. Letting patients relive terrifying emotional experiences has a therapeutic effect. (DSG)
4254. Neuroses in wartime.  
 THE LANCET (London)  
 1939, December 16, Vol. 237, No. 6068, p. 1279.  
 Account of classification, diagnosis, and treatment of patients exhibiting nervous symptoms during and after air raids. (DLC)
4255. A new kind of shock.  
 ROYAL ARMY MEDICAL CORPS. JOURNAL (London)  
 1941, May, Vol. 76, No. 5, pp. 287-288.  
 A phenomenon new to medical records, which has never been described before and which involves very intricate questions of physiology is called "Crush injuries with impairment of renal function". Persons caught under debris by a bomb explosion or direct hit, after being rescued may suffer from shock and lacerations of the various parts of the body in which the crushing of living tissue has gone on for hours. Some show signs of being fairly well and likely to recover and others likely to die. The retention of urine, low blood pressure and an increasing amount of haemoglobin in the blood point to a uraemic condition which some survive, to die later of a septic condition. (DSG)
4256. Obscure nervous effects of air raids.  
 Clifford, Allen.  
 THE BRITISH MEDICAL JOURNAL (London)  
 1941, May 10, Vol. 1, No. 4192, p. 727 (DSG)
4257. Shell shock of the first war now is blast concussion.  
 SCIENCE NEWS LETTER (Washington, D. C.)  
 1941, August 30, Vol. 40, No. 9, p. 142.  
 What was commonly known as shell shock during the War of

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1914 to 1918 is now called blast concussion. The effects of compression and suction on the elastic walls of the abdomen displace the fluids of the body with extreme violence, and the strain upon the nervous system is severe. In fatal cases hemorrhage punctures are found post mortem. Shock will differ psychologically according to mental and physical conditions. Normally fear influences the adrenal glands and prepares the body for fight or flight, but for the civilian under bombardment, fortitude, endurance, and self control are necessary. (DSG)

## AMBULANCES

4258. Ambulance services (Circular 1787)  
Great Britain. Ministry of Health.  
1939, March 24, London, H. M. Stationery Office.  
Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. (2d.5¢)
4259. Ambulance services. Stretcher-carrying fitments for small ambulances. (Circular 1794)  
Great Britain. Ministry of Health.  
1939, April 3, London, H. M. Stationery Office.  
Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. (2d.5¢)
4260. Ambulance services. Stretcher-carrying fitments for small ambulances. (Circular 24)  
Great Britain. Department of Health for Scotland.  
1939, May 18, London, H. M. Stationery Office.  
Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. (2d.5¢)
4261. ARP ambulance work must be soundly organized.  
THE COMMERCIAL MOTOR (London)  
1939, February 10, Vol. 69, No. 1769, pp. 12-13.  
Lessons derived from practical work in ARP. Volunteer workers become accustomed to routine procedure from this training. Organization of ambulance units essential. (DLC)

## AMBULANCES

4262. Home ambulance trains.  
 THE RAILWAY GAZETTE (London)  
 1939, October 20, Vol. 71, No. 16, p. 521-522, photos.  
 British railway companies are providing ambulance trains to remove air raid casualties from hospitals in dangerous areas to base hospitals in safety zones. Thirty of these trains are available. The nine vans of the train are equipped with medical instruments and supplies. They will take 30 stretcher cases each, making a total of 270 stretcher cases on each train. Photographs illustrate scenes during a rehearsal in Yorkshire. (DLC)
4263. Organization of ambulance services (Circular 15)  
 Great Britain. Department of Health for Scotland.  
 1939, March, London, H. M. Stationery Office.  
 Available at British Library of Information, 50 Rockefeller Plaza, New York, N.Y. (2d. 5¢)
4264. Re. St. Andrew's Ambulance Association and the Scottish branch of the British Red Cross Society (Circular 3146).  
 Great Britain. Scottish Office.  
 1936, June 23, London, H. M. Stationery Office.  
 Out of print.
4265. Re. St. John Ambulance and British Red Cross. (Circular 700271/19).  
 Great Britain. Air Raid Precautions Department.  
 1936, June 23, London, H. M. Stationery Office.  
 Available at British Library of Information, 50 Rockefeller Plaza, New York, N.Y. (2d. 5¢)
4266. Scotland. (Pooling of Scottish ambulances)  
 BRITISH MEDICAL JOURNAL (London)  
 1940, April, No. 4135, p. 583.  
 Arrangements for pooling ambulances of Scotland. This had been suggested so that ambulances could be placed at strategic points to be available for transportation of air raid casualties and the wounded of the fighting forces. (DLC)
4267. Shock of the ambulance journey.  
 Atkins, R. P. G.  
 THE BRITISH MEDICAL JOURNAL (London)  
 1941, January 11, No. 4175, p. 63.  
 The care of patients in an ambulance journey is given



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special consideration in this article. The writer feels that in many cases the drivers are too rough. He suggests that all transportation must be as smooth as possible; speed of the ambulance should vary according to the surface and should be reduced on bends and curves so that the patient will not be swayed. Many shocks can be prevented by observing these simple rules. (DSG)

4268. Shock of the ambulance journey.

Duff, D. G.

THE BRITISH MEDICAL JOURNAL (London)

1940, November 9, No. 466, p. 647.

Shock produced in an ambulance journey, by driving excitedly over hilly roads and the turning of corners sharply is condemned. Fastening the patient securely to the stretcher and driving slowly and carefully, over the shortest possible route, are required for the ARP ambulance service. (DSG)

ANDERSON SHELTERS, See SHELTERS, STEEL AND IRON.

## ANIMALS

4269. Dienst des Tierarztes im Luftschutz (The veterinary service in air defense)

Richters.

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT (Munich)

1935, June 7, Vol. 82, No. 23, p. 931.

The care and protection of animals in war must rest with the veterinarian. He must organize a fixed and a mobile service. Stationary units should be provided at or near the animal recovery stations and clinics; the mobile units are connected with the transport corps. Especial care must be given to the preparation of foods for the animals. All meats should be cooked thoroughly, the water drained off and the meat wrapped in oil paper or cellophane. Procedure for preparing foodstuffs that may be contaminated with different poisonous gases is described. (DSG)

4270. Gas-proof shelter for animals.

ENGLISH MECHANICS (London)

1939, December 29, Vol. XXVII, No. 688, p. 186.

Instructions for the construction of ARP shelters for

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animals are given. Type of material, measurements and methods are described. The amount of air needed for different animals is taken into consideration when using a sealed box to protect animals in the event of a gas attack. A container made according to given directions will be perfectly safe for at least two hours and probably for a much longer time. (DLC)

4271. K voprosu ob operativnom rukovodstve komandam veterinarnoi pomoshchi. (The problem of operative management of veterinary sections of ARP)

Motylev, B. G.

VESTNIK PROTIVOVOZDUSHNOI OBORONY (Moscow)

1938, No. 6, p. 49.

In a letter to the editor, the author discusses the problem of efficient organization of veterinary services and points out contingencies which may cause misunderstandings in the matter of administration. (DSG)

4272. Kollektivnaia zashchita zhivotnykh protiv O.V. (Protection of livestock against the effects of toxic gases)

Riabov, G.G. and Lin'kov, I.I.

VESTNIK PROTIVOVOZDUSHNOI OBORONY (Moscow)

1937, No. 1, pp. 34-37, photos.

The problem of protecting livestock against war chemicals is important. It is hardly possible to build shelters for the animals because of high building costs; but it is always possible to improvise some emergency shelter with material on hand. The problems in this connection are: (1) the air changes in the air-tight shelter while the animals are in it; (2) the length of time the livestock may remain in the shelter in relation to its cubic content and the air requirements for animals; (3) animal behavior while in the shelter. (DLC)

4273. Po stranitsam zarubezhnoi pechati (Germaniia) (Review of the Foreign press (Germany))

KHIMIYA I OBORONA (Moscow)

1934, No. 1, p. 22.

Training of veterinarians. Much attention has lately been paid to defense against poisonous substances and to decontamination of feed stocks. In the War Veterinary

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Institute special courses were organized for training city veterinaries in Berlin. Similar courses are to be organized for veterinaries of slaughter houses. In the Veterinary High School of Berlin, chemical warfare veterinary service is compulsory. (DLC)

4274. Preduprezhdenie otravleniia zhivotnykh v usloviakh PVKHO  
(Protection of domestic animals against poisoning raids afforded by ARP)  
Vodzinskiĭ, B.  
KHIMIĬA I OBORONA (Moscow)  
1938, March, No. 3, p. 15.

Rules and recommendations for protecting animals during air raids and gas attack include providing animals with means of protection, the utilization of covered sheds, timely evacuation from regions of possible attack, clever use of available means of camouflage and careful supervision of the animals. Cattle should not be kept in large herds on the pastures. All stables and barnyards should be well protected against fumes and gases. Where animal gas masks are not available, feed bags with two layers of wet straw should be used. Available material (bags, tarpaulins, horse-blankets) should be utilized. (DLC)

4275. Statsionarnye punkty veterinarnoi pomoshchi (Stationary dispensaries for veterinary aid)  
Borisoglebskiĭ, A.  
VESTNIK PROTIVOVOZDUSHNOĬ OBORONY (Moscow)  
1938, No. 10, pp. 37-40, plan.

The problems of veterinary aid in relation to ARP services are discussed from the viewpoint of already existing dispensaries and new stations to be constructed. The planning of a new station is taken up in detail. (DLC)

4276. Zashchita zhivotnovodcheskikh khoziastv ot iprita (Protection of livestock farms from mustard gas)  
Kononok, A.  
KHIMIĬA I OBORONA (Moscow)  
1932, No. 2, pp. 8-9.

The effect of mustard gas upon animals and the different symptoms are discussed. The effects upon eyes,



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respiratory organs, skin, limbs, and digestive organs are described. The effect upon the digestive system is the most dangerous. A horse dies from 0.5 to 2.0 gr. of swallowed mustard gas, a cat from 1 to 2 drops, a dog from 2 to 4 drops, and even smaller quantities cause grave consequences. The digestive tract can also be affected by poisoned feed, by the scratching of irritated skin, which has come into contact with liquid mustard gas, and by the licking of anything contaminated by mustard gas. (DLC)

4277. Zoos in wartime.

NATURE (London)

1941, May 10, Vol. 147, p. 571.

A report from the meeting of the zoological society of April 29, indicating precautionary measures undertaken to house and feed the zoological collection during the war. The effect air raids have had on some animals is discussed. Girl keepers are being employed. (DLC)

ARCHITECTURE AND BUILDING. See STRUCTURAL PRECAUTIONS

ARCHIVES. See also DOCUMENTS: LIBRARIES.

4278. Air raid shelter in America proposed to guard best data.

SCIENCE NEWS LETTER (Washington, D.C.)

1941, January 4, Vol. 39, No. 1, p. 4.

Dr. K.A.C. Elliott, biochemist of a Philadelphia hospital, urges formation of a Preservation of Science Council to protect the most important research data and equipment by building a great vault and air raid shelter. (DLC)

4279. Der archieven en de luchtbescherming. (The archives and their protection against air raids)

NEDERLANDSCH ARCHIEVENBLAD (Groningen)

1939-1940, No. 47, pp. 33-34.

During the World War a plan was perfected for the protection of documents, books and valuable archival material against air raids. Especially well constructed spacious cellars were built at considerable depth beneath the administrative building of the Reichs-archives, and about 60,000 volumes of books, documents, and portfolios were

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placed in them. This material comprised the most important parts of the archival holdings of the three sections into which the Reichs-archives are divided. Doors and walls as well as windows of the cellars were strengthened by sand-bags to make them secure against bomb splinters and air pressure. To prevent dampness, the walls, ceiling and floor were of concrete. (DLC)

4280. Die Frage des Luftschutzes für Archive und Akten (The question of defense against air raids for archives and documents)  
Burkard, Hans.  
ARCHIVALISCHE ZEITSCHRIFT (Munich)  
1936, Vol. 44, pp. 172-180.

Aside from the actual protection of books, documents, official papers, and other archival material, against air raid effects, important preliminary precautions should be taken. In the first place, loosely piled papers kept in attics must be removed because of the fire hazard. They must be placed, not in damp, dark cellars, but in cellars or lower storeys where they will be absolutely safe from fire and dampness. Secondly, if such archival material is or has to be kept upon wooden shelves, such shelves must be painted or soaked with fireproof liquids. The chemical industry manufactures such protective materials but even potassium silicate or double water-glass will be effective. Only plain woodwork (without paint) holds or absorbs such substances; iron does not. Impregnation of the entire woodwork of the roof of archives or buildings where books, documents, and archival material are kept is strongly recommended; also the reinforcement of the floor in the attic by a gypsum or steel layer. Because of the danger that fire may spread from neighboring buildings, the windows of the archive-building should be protected by iron shutters, while the doors should be made fireproof. The documents themselves and the archival material - even if of parchment - should not be impregnated. Even if the building is of steel structure, pails filled with water may well be kept on the lower floors. In order to save the most precious documents and other archival material from any damage by fire, steel boxes should be used, since the steel industry is so far advanced that it may guarantee the resistance of its steel products to fire. But it has been also found that, unfortunately, the heat of the hot steel scorches the edges of paper documents within the boxes and shrivels parchment documents so that the



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writing thereon can hardly be deciphered. Wax seals have melted and have been absorbed by the paper. Steel boxes with special containers, separated from the walls of the box by an air-filled space are available but prohibitive in cost. The best possibility for the safekeeping of the most valuable materials is a fully betonized section in the cellar. Against splinter-effect and air pressure, the archive building may be made secure (in its lower floors) through sandbag packings at the outside. Window panes may be effectively protected by wire netting. The modern building concept demands a more open style of city building. Spaces, more or less wide, should separate the various building complexes; and parks, open places, and greens should make the bombing of cities more difficult as far as "hits" are concerned. Archives buildings should, therefore, be situated with plenty of open space around them and with no big traffic lines, railroad stations, large factories, or even rivers in the vicinity. As building material for archives, beton should be chosen where suitable. Its resistive strength has been frequently proved. Narrow and very high buildings as archives have indeed a certain advantage. But buildings are preferable in which a large part of depository space is below ground, but is kept dry by good ventilation and heating. At least two such rooms, for people and for archival material, should be provided. Besides, the entire inside of the building should be fireproof. The roof of the archives building should be steep and smooth, and the water-conduit should reach as high as possible. As a protection of the roof against incendiary bombs, a massive covering of pure steel is highly desirable. The development of the bomber has created new and difficult problems for the archives in the protection of their precious cultural contents against air raid attacks. The solution of these problems is a vital question for archivists. (DLC)

4281. Protection from air attack. The clearance of attics in public offices.

Germany. Minister for Air and Commander in Chief of the Air Force.  
ZENTRALBLATT DER BAUVERWALTUNG VEREINIGT MIT ZEITSCHRIFT FÜR  
BAUWESEN (Berlin)  
1938, Vol. 58, p. 131.

According to the third decree for execution of the air raid protection act of May 1937, important documents stored in attics of public offices may remain so stored, even if it should not be possible to remove them rapidly in the event of an emergency. Measures to be taken, where the



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documents cannot be rapidly removed to a safer place, include the use of fireproof stacks, the covering of woodwork by plaster on a backing of non-combustible material, or in the case of shortage of material, the treatment of combustible shelves and woodwork with suitable fireproofers. Large storerooms should, if possible, be divided up by a fireproof or at least fire retarding partitions.

(Building Science Abstracts, 1938, No. 1059) (DLC)

ART, OBJECTS OF. See MUSEUMS

AUTOMOBILES. See TRANSPORTATION, AUTOMOTIVE

## BARRAGE BALLOONS

4282. Balloon damage.

Barnett, E. J.

THE RESERVE OFFICER (Washington, D. C.)

1941, August, Vol. XVIII, No. 8, pp. 3-4, illus.

Barrage balloons are designed to force enemy bombers above effective bombing range and to prevent dive bombers from diving too close to their target. Spaced from one half mile to a mile apart and strategically staggered, their swaying cables present a real hazard to airplanes. A plane is lost should it strike a cable. The balloons are discriminately disturbed to protect air ports, steel mills, and navy yards. Though not considered by the army a sure cure for air raids, they will reduce losses and casualties, as in England. (DLC)

BASEMENT SHELTERS. See SHELTERS, BASEMENT

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4283. A list of bibliographies on questions relating to national defense.

U.S. Library of Congress. Division of bibliography.

1941, Washington, D. C. Pp. 21.

An author list containing 188 entries. Library of Congress

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call numbers supplied. (DLC)

4284. Selected references on air raid protection.  
Portland Cement Co.

1940, London, Portland Cement Co. Pp. 44.

Annotated bibliography arranged by year, from 1934 to 1937. Includes books and periodical references. The supplement of seven pages carries a bibliography, also annotated, re-published from "Concrete and Constructional Engineering" for November, 1939. (DLC)

BILLETING, See EVACUATION - RECEPTION AREAS - BILLETING

BLACKOUT. See CAMOUFLAGE.

4285. Aids to movement of traffic to be installed in roads and streets in the absence of street lighting. (Miscellaneous)  
Great Britain. Air Raid Precautions Department.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 2d. 54)

4286. Are blackouts necessary?  
ROADS AND BRIDGES (Toronto)

1941, August, Vol. 79, No. 8, p. 60.

At a meeting of engineers, blackouts are declared to be largely responsible for the increase in crime and traffic accidents and to be of doubtful military value. Among the possible improvements discussed was the training upon the sky of small but powerful searchlights and wide floodlights. This would not only make for confusion and hindrance to the enemy, but would lend aid to anti-aircraft forces in destroying him; moreover, this scheme would return to civilians normal living and working conditions. (DPR)

4287. Augenarzt und Verdunklung (The oculist and the blackout)  
Miller, K. H.

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT (Leipzig)

1940, May. 24, Vol. 66, No. 21, pp. 567-569.

Blackout regulations have caused several problems for the

oculist. The first step is to determine the probable number of persons subjected to this condition and the ratio of eye injuries. Next the oculist must devise protective measures for the care of the eyes. Care should be exercised in the arrangement and design of pedestrian traffic signals. The examination of many persons shows that defective vision resulting from the blackout was aggravated by physiological defects which existed prior to the war. Description of tests with Nagel's Adaptometer. Summary of results and construction of the standard curve. (DSG)

4288. Beleuchtung im Luftschutz. (Lighting during air raid defense) Hsndbuch der Licht-Technik.

1938, Berlin, Julius Springer, pp. 746-754.

Important problems of air raid defense are closely connected with technical lighting problems, viz. "Measures for blackouts, auxiliary lighting and camouflage." "Limited lighting" consists of eliminating conspicuous light effects which would guide hostile aeroplanes, while a blackout places the entire region in complete darkness, and thus affords full protection against aerial bombing. "Limited lighting" is effected by eliminating all superfluous light, as from show windows, advertising signs, and not absolutely necessary street lamps. This limitation of lighting is under supervision of the police. The change from "limited lighting" to "blackout" must be effected within one minute. During nightly air raids, the entire region subject to raid is placed under blackout by the signal "flieger-alarm", whereupon all work and traffic ceases and the population enters the shelters. The complete blackout renders it impossible for hostile air forces to observe human habitations at night. Shelters should be lighted by appliances that do not consume oxygen. Generally, electric lights are employed, though disturbances in the electric current demand also the provision of auxiliary lighting. (DLC)

4289. Blackout conditions.

THE LAW TIMES (London)

1941, March 15, Vol. 191, No. 5111, p. 132.

Wartime legislation has resulted in removal of lights from lamp posts, telegraph posts, pillar boxes, etc. There is



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some advantage in using splashes of white paint on such things, but failure to use this does not constitute negligence. The public must take the highway as it is found. (DLC)

4290. Blackout damages.

HIGHWAYS AND BRIDGES (London)

1940, January 24, Vol. VI, No. 290 p. 2.

Blackout damages to the amount of 15 guineas were awarded a commercial traveler who ran into a wall of sandbags forming an air raid shelter. (DPR)

4291. A bus driver in the blackout.

THE TRANSPORT WORLD (London)

1941, January 11, Vol. LXXXIX, No. 2837, p. 51.

A bus driver in Northern Ireland in discussing his experiences over a period of sixteen years gives some suggestions for the safety of pedestrians. (DLC)

4292. Camouflage with lights - blackouts.

Dickerson, A. F.

POPULAR MECHANICS (Chicago)

1941, October, Vol. 76, No. 4, p. 61, illus.

The division of a city into areas and the installation of a flood light to be turned skyward in each area is suggested as a substitute for the blackout. (DLC)

4293. "Dimouts" urged instead of total blackouts for U.S.

SCIENCE NEWS LETTER (Washington, D. C.)

1941, August 16, Vol. 40, No. 7, p. 104.

Samuel G. Hibben, Director of Applied Lighting for the Westinghouse Electric and Manufacturing Co., working with the National Technological Civil Protection Committee, suggests "dimouts" instead of blackouts. He advocates that power stations be equipped with voltage regulating devices, which would reduce street lights to a reddish glow sufficient for civilian activity, as often more civilians are injured by accidents during total darkness than by falling bombs. Ultra-violet black light can be used when intensities still lower than moonlight require it. Signs painted with a glowing material under the invisible ray should be used to guide civilians to

## BLACKOUT

subway entrances, police stations, bomb shelters and hospitals. He recommends that during a blackout moving cars and trucks have their lamps covered with white bands, with cat-eye slits in headlights and small running lights under the chassis; further, that city police be provided with portable shielded traffic lights strapped to their shoulders. (DLC)

4294. If the blackout comes.

Hibben, Samuel G.

ELECTRICAL ENGINEERING (New York).

1941, August, Vol. 60, No. 8, pp. 389-392, illus.

American cities can profit by European experience to plan air raid precautions that will permit traffic movement without creating undue hazards. Experience in Europe shows that fireproof fabric curtains to shield windows are preferable to painted windows, especially for skylights. (DLC)

4295. Lighting restrictions (Circular 700225/114)

Great Britain. Air Raid Precautions Department.

1938, February 14, London, H. M. Stationery Office.

Available at British Library of Information, 50 Rockefeller Plaza, New York, N.Y. (ld. 5¢)

4296. New Mexico to stage blackout on September 12; will serve as a state wide test for nation.

DEFENSE (Washington, D.C.)

1941, August 19, Vol. 2, No. 33, p. 22.

Study to be made of blackout in New Mexico by Office of Civilian Defense and results made available to each state throughout the Union. Twelve cities of the border state, which was chosen for its vulnerability to possible attack, will undergo a sham air raid with ARP routine following through for the duration of the demonstration. (DPR)

4297. Lyus v. Stepney Borough Council.

THE LAW TIMES (London)

1941, February 3, Vol. 191, No. 5106, pp. 70-71.

In the case of Lyus v. Stepney Borough Council, a collision

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with an unlighted sand bin resulted in a suit against the council for damages due to negligence and breach of statutory duty. Judge Humphrys held that the Lighting (Restrictions) Order, 1939, did not absolve the council from common law duty and ruled against it. On appeal the higher court ruled that no negligence was found on the part of the council because under the Act of 1928 the council was not compelled to paint, whitewash or light the sand bin. (DLC)

4298. Success of blackouts.

THE UNITED SERVICES REVIEW (London)

1938, November 24, Vol. LXXVII, No. 4114, p. 3.

An ARP blackout test in Switzerland proved that definite targets cannot be distinguished accurately. Examples are cited of the effectiveness of the blackout demonstration. (DLC)

4299. Svetomaskirovka v sovremennoi voine (Lighting camouflage in modern warfare)

Korotkov, K.

SOTSIALISTICHESKII TRANSPORT (Moscow)

1940, No. 11, pp. 57-64.

The various experiments in the use of lighting camouflage in England, France, and Germany are reviewed in this article. The subjects covered include: the advantages and disadvantages of blackouts, protective screening and painting, the pros and cons of blue lighting, and particularly the problem of lighting camouflage on railroads. (DLS)

4300. Wartime seeing considerations.

Wright, L. D.

I.E.S. LIGHTING REVIEW (Melbourne)

1941, June 3, pp. 10-12, illus, diags.

A review of some of the technical aspects which will be all important in case of ARP blackout: lighting restrictions and the protection of buildings and their occupants; lighting restriction methods for windows offering minimum protection; rooflights, outdoor areas and internal lighting and ventilation. The ARP light-lock for shop entrances is illustrated. (DLS)



## BLACKOUT

4301. Lynn has a blackout lighting system.

THE AMERICAN CITY (New York)

1941, June, Vol. 56, No. 6, p. 121.

A demonstration of blackout lighting was made on May 14. The demonstration was made in Parkland Avenue where 12 specially designed luminaries (2½ watt Argon (gaseous) lamps) were operating. The lights gave off about 1 candle power. As eyes became used to the extremely low level of lighting, it was possible to see quite clearly those near by and objects and persons 25 ft. away. The police, fire departments, and the Lynn Gas Electric Co. should be given credit for a successful demonstration of America's first experimental blackout. (DLC)

4302. Newark blackout.

TRANSIT JOURNAL (New York)

1941, June, Vol. 85, No. 6, p. 192, illus.

The third blackout experiment in a major city in the United States occurred May 26 at Newark with much success. Observers reported that bombers flying over Newark at the usual altitude for bombardment could not distinguish anything of military importance. Illustrations: a section of down town Newark before and during blackout.

## BLACKOUT -- EQUIPMENT

4303. ARP and the handyman. Fixing method for ARP shutters.

ENGLISH MECHANICS (London)

1939, September 29, Vol. XXVI, No. 675, p. 461, illus.

Rawlbolts with buffer springs to absorb shock and prevent buckling, used in fixing ARP shutters. Full instructions on how to attach and insert bolt given along with illustrations. (DLC)

4304. Automatic blackout ensured.

BUSINESS (London)

1939, December, Vol. LXIX, No. 12, p. 18.

For protection against light leakage the "blackout switch"

## BLACKOUT - EQUIPMENT

can be used in switching the light off on going out of a door and on again when the door has closed sufficiently. (DLC)

4305. Blackout switch connections.

ENGLISH MECHANICS (London)

1939, December 8, Vol. XXVII, No. 685, p. 138.

Method of using the Crabtree "Blackout" Switch is described. When the door is opened the switch is operated and the light switched off; the light is immediately switched on again, when the door is closed. (DLC)

4306. A lamp shield.

ENGLISH MECHANICS (London)

1939, November 24, Vol. XXVII, No. 683, p. 102.

Instructions are given for the method of constructing a simple ARP lamp shield which is efficient and can be made and used in any home. Very little screening will be needed on the windows, perhaps none will be necessary, if the lamp shields are used in rooms where the light falls on dark objects. (DLC)

4307. New products: blackout materials.

BUSINESS WEEK (Albany, N.Y.)

1941, September, No. 629, p. 66.

Business Week reports that among the new products patented by the recently formed U.S. Defense Materials Corp., at 315 Berry St., Brooklyn, N.Y., are "blackout sheets" and "daylight vents". Full information on the construction of these two items is given, with their use as aids to ARP. (DPR)

4308. Reflecting studs in the blackout.

ROADS AND ROAD CONSTRUCTION (London)

1939, November, Vol. XVII, No. 203, P. 348.

Reflecting studs placed on roads provide comfort and security to driving during the blackout; curb edges and center lines fitted with these reflector buttons guide a speeding motorist safely. (DPR)

## BLACKOUT - EQUIPMENT

4309. Roller blinds and the blackout.

ENGLISH MECHANICS (London)

1940, January 26, Vol. XXVII, No. 692, p. 248.

A common method used to prevent a conspicuous crack of light from being visible from outside is to tack strips of plywood or building board to the sides of the window frame over which the blind is lapped. This is considered a costly, cumbersome, and unsatisfactory method. The use of a number of rubber turn buttons is the most certain and the cheapest method. An explanation of this method is given. (DLC)

4310. Stopping light leaks.

ENGLISH MECHANICS (London)

1940, March 15, Vol. XXVII, No. 699, p. 361.

Large-headed drawing pins are suggested as a means of preventing light leaks from the sides of dark window curtains of the sliding rail type. They should be put about one foot apart on the outside vertical edge. (DLC)

## BLACKOUT - LIGHTING

4311. Beleuchtung im Luftschutz (Lighting during air raid defense)

Sewig, Rudolf.

Handbuch der Licht-Technik.

1938, Berlin, J. Springer, pp. 746-762.

(1) Outer illumination: (a) for "limited lighting", (b) for blackout. (2) Internal illumination: (a) for living and secondary rooms, (b) for industrial and trading establishments, (c) for traffic purposes. A number of so-called "Richtlampen" have been invented for blackout purposes and tested as to their effectiveness. For internal illumination so-called "Luftschutzlampen" are used. Their opening for air circulation is circular and protected by a light-tight cover. Industrial and trading establishments use light-tight reflectors of a very small diameter. For traffic purposes the so-called "Disco" illuminators, which have an upper and lower reflector, are used. (DLC)

4312. Control of lighting in buildings for air raid protection.

Bleser, E.

ELEKTROTECHNISCHE ZEITSCHRIFT (Berlin)

1938, Vol. 59, pp. 337-39.

A simple method of dimming the electric lights in a building



## BLACKOUT - LIGHTING

is to lower the voltage supply. With alternating current this can be done by means of a suitable transformer, which in an emergency is incorporated in the circuit by a master control. Preliminary trials will determine the decrease in voltage supply required; this is usually about 25 to 45 per cent. In the case of direct current supply the reduction has to be effected by resistance, and since in this case the actual decrease will depend on the load, a hand adjustment will have to be provided. Where the work carried out in the building demands the continuance of full illumination over restricted areas, lamps can remain on the full supply circuit and can be provided with tubular shades to concentrate the light in the required areas. If properly installed, sunblinds covering the windows will prevent any escape of light outside of the building.

(Building Science Abstracts, 1939, No. 209) (DLC)

4313. Emergency lighting.

Dowsett, G. H.

MUNICIPAL ENGINEERING (London)

1937, Vol. 99, pp. 82-84.

It is generally accepted that interruption of the electricity supply might result from an air raid, and that an alternative form of lighting should be independent of the main supply and should preclude the possibility of the ignition of any inflammable gas. There are important objections to the use of coal, gas, or oil, as such lights may be extinguished by concussion, while gas pipes are vulnerable and easily fractured. Electricity from storage batteries is the only other satisfactory source of illumination. For this purpose the nickel-cadmium alkaline cell is particularly suitable; among its essential features is its capacity to stand idle for long periods without loss of charge. Brief descriptions are given portable lighting installations.

(Building Science Abstracts, 1937, No. 1703) (DLC)

4314. Exterior lighting in air raids.

THE ENGINEER (London)

1940, August 2, Vol. CLXX, No. 4412, p. 82.

Head lamps on motor vehicles and lighting allowed in establishments engaged in essential production come in for special consideration by the Ministry of Home Security. It

## BLACKOUT - LIGHTING

may be necessary at times to require such lighting to be extinguished. Motorists will be warned by police when to extinguish their lights. (DLC)

4315. G.E. demonstrates America's first blackout lighting.

TRAFFIC ENGINEERING (New York)

1941, July Vol. XIII, No. 3, p. 76.

Demonstration of America's first blackout-lighting staged at Lynn, Massachusetts, before army and governmental officials. Complete report is given of methods and apparatus employed. (DPR)

4316. Light-locks.

MECHANICAL WORLD (London)

1939, November, Vol. 1062, No. 2753, p. 452.

Light-locks, more commonly known as light-traps, are constructed to overcome the difficulties arising from the need for doorways and for ventilation in the blackout. The types of light-locks in use are described in this article. (DLC)

4317. Lighting in relation to protection from air attack.

Seidel, F.

ELEKTROTECHNISCHE ZEITSCHRIFT (Berlin)

1936, Vol. 109, p. 10.

Should war become imminent, the reduction of indoor and street lighting throughout the country would immediately ensue. Means would be taken to prevent conspicuous beams of light issuing from buildings; e.g. in workshops, etc., lamps would be required to have impermeable, adjustable reflectors, and ordinary lighting would be dimmed, or windows would be fitted with suitable blinds. In case of street and other outdoor lighting, the emission of beams upwards would have to be prevented. Measures would have to be taken also to reduce the light intensity under lamps.

(Building Science Abstracts, 1937, No. 413.) (DLC)

4318. New equipment for wartime needs.

THE MUNICIPAL JOURNAL (London)

1940, August 9, Vol. 49, No. 2480, p. 1048.

A technical discussion of the various methods of lighting and new types of lamps developed since the blackout began.

## BLACKOUT - LIGHTING

Describes suitable lamps for air raid wardens, curb lights, and air raid shelter lights. (DLC)

4319. Outdoor lighting during blackout.

THE AUTOMOBILE ENGINEER (London)

1941, February, Vol. XXXI, No. 407, p. 47.

Special lighting fittings have been designed for the illumination of essential night work on building construction, loading yards, etc. The main feature of these new fittings is that the reflectors direct the main beam of light forward without permitting any direct light above the horizontal. They can be used with general service lamps of 40 - 200 watts and are fitted with an adjustable pole clamp to accommodate poles from 3 in. - 5 in. diameter. (DLC)

4320. Rectifiers in air raids.

ELECTRICAL REVIEW (London)

1940, August, Vol. 127, No. 3273, p. 124.

Though glass is necessarily fragile, bulbs made of tough heat-resisting material, spherical in shape, are highly resistant to concussion. (DLC)

4321. Some aspects of wartime illumination.

Wright, L. D.

I.E.S. LIGHTING REVIEW (Melbourne)

1940, December, pp. 9-10.

The trial of flares, star shells, etc., is advocated as an alternative to searchlights as defense against night bomber. Street lighting should be standardized to approximately 1/100th of moonlight. The effect of blackout on night vision, the use of the "black-lamp" and of complementary colors, and the difficulties involved in wartime lighting of factories are discussed. Reduced illumination in industry would not result in concealment from the air at night, but would impair the employees' health, the speed of production, and the quality of the work. (DLC)

## BLACKOUT - LIGHTING - FACTORY LIGHTING

4322. How to avoid factory blackout accidents.

BUSINESS (London)

1941, June, Vol. LXXI, No. 6, p. 19.

Blackout accidents have occurred in factories when power



## BLACKOUT - LIGHTING - FACTORY LIGHTING

stations miles away have been hit by bombs. In the ensuing darkness, after the "imminent danger" signal has sounded, employees, groping their way to the shelters, stumble over castings, furniture, tools, stoves, etc. An auxiliary lighting system has been devised that not only safeguards the workers but also enables essential work to be carried on in certain parts of the factory. A typical installation has a battery sufficiently large to supply emergency lighting for 3 hours. The lighting set is equipped with change-over contractors, so that when the main supply is shut off these contractors come into operation. The set is also fitted with a discharge switch to enable the emergency lights to be switched on normally, if required. After the emergency lights have been used, it is necessary for the battery to be charged only for a few hours. (DLC)

4323. Industrial and commercial lighting for ARP.

FOUNDRY TRADE JOURNAL (London)

1939, November 2, Vol. 61, No. 1211, p. 326.

Artificial lighting to be in service most of the day as well as the night. Fluorescent material and black lamps are suggested as they allow premises to be evacuated and plant shut down in event current supply is disconnected. (DLC)

4324. 23,000 lamps and 35 air conditioners in factory.

SCIENCE NEWS LETTER (Washington, D.C.)

1941, August 2, Vol. 40, No. 5, p. 68, illus.

A specially designed "blackout" factory has been erected at Long Beach, California, with 35 air conditioners and enough lighting to supply Lincoln, Nebraska. Having no windows, the plant is completely invisible to air raiders at night. Cover illustration shows a few of the 8000 mercury vapor lamps undergoing tests. (DLC)

## BLACKOUT - LIGHTING - PORTABLE LIGHTS.

4325. ARP hand-lamp.

THE ELECTRICAL REVIEW (London)

1940, March 1, Vol. CXXVI, No. 3249, p. 251.

The "Supreme Pilot-lite" produced by L.G. Hawkins & Co.

## BLACKOUT - LIGHTING - PORTABLE LIGHTS.

Ltd., Drury Lane, London, W.C. 2 permits no direct light to be visible above the horizontal, but it can be used to provide general illumination when its hinged reflector is raised, so enabling the light to spread. Where bedroom windows are not covered, it is possible to use the lamp without contravening blackout regulations. (DLC)

4326. Flashlight battery economy.

ENGLISH MECHANICS (London)

1939, November 24, Vol. XXVII, No. 683, p. 102.

A spare torch fitted with a low consumption bulb will prolong the use of a dry battery. If the seemingly exhausted battery is transferred to the reserve torch with a special l. c. bulb it will give a light sufficiently bright for use during a blackout. (DLC)

4327. A portable ARP light.

BRITISH PLASTICS AND MOULDED PRODUCTS TRADER (London)

1939, November, Vol. 11, No. 126, p. 273.

Illustrations of the new "Arplyte" portable light with large capacity dry batteries in a case, with moulded lamp holder. The shade is removable and can be turned to throw light in any direction. (DLC)

## BLACKOUT - LIGHTING - STREET LIGHTING

4328. ARP lighting in Germany.

ENGINEER (London)

1940, February 2, Vol. 119, No. 3864, p. 118.

Street lighting and equipment used during blackout in Germany. (DPR)

4329. Experiments in street lighting.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS JOURNAL (London)

1939, November, 7, Vol. 66, No. 11, p. 10.

"Experiments to devise a type of modified street lighting of very low intensity" invisible to raiding aircraft have been completed. Ordinary street lighting can be seen by hostile aircraft as far away as forty miles. To switch off

## BLACKOUT - LIGHTING - STREET LIGHTING.

the lights when warning signal is given would be too late to prevent accurate bombing of the city. (DLC)

### 4330. Wartime road lighting improvement.

MODERN TRANSPORT (London)

1941, July 19, Vol. 45, No. 1,166, p. 8, illus.

A detailed explanation of a low level light diffusion scheme designed to illuminate thoroughfares and at the same time prevent visibility to the enemy. Illustrations show "Bollard" lighting units. (DLC)

## BLACKOUT - LIGHTING - VEHICLE LIGHTS.

### 4331. Lights on road vehicles.

MONTHLY BULLETIN OF ROAD INFORMATION (London)

1940, November, No. 45, p. 281.

Vehicles may continue in motion to carry on necessary business of traffic after air raid warning, through orders from the Home Office permitting motorists to use masked head lamps. When brought to a stop however, all vehicles must have lights extinguished, unless officially instructed otherwise. It is also ordered that all vehicular lights must be further dimmed so as to render clear visibility at 30 yards, but a complete blackout at 300 yards. (DPR)

## BLACKOUT - PRIVATE DWELLINGS.

### 4332. A scientific method of blacking-out.

ENGLISH MECHANICS (London)

1940, February 16, Vol. XXVII, No. 695, p. 297.

Plywood is not considered a satisfactory material for blacking out, because it will not withstand weather conditions. Curtains are undesirable because they are expensive. "Black-light", produced by two-color lighting, which shows black outside, is a perfect blackout, and has none of the above disadvantages. Instructions are given for the best method of obtaining the correct lighting effect. (DLC)



BLACKOUT - REGULATIONS. See also LAWS AND REGULATIONS.

4333. Blackout.

ELECTRICAL TRADING AND RADIO MARKETING (London)

1940, July, Vol. 11, No. 129, p. 25.

Regulations require any light inside any roofed building, enclosed vehicle or other covered inclosure to be so screened as to prevent any illumination being visible outside the building or inclosure. No sky sign, fascia or advertisement may be illuminated or any light displayed outside the entrance to premises. (DLC)

BLACKOUT - TRAFFIC HAZARDS.

4334. English aids for traffic during blackout periods.

PUBLIC WORKS (New York)

1940, April, Vol. 71, No. 4, p. 56.

Essential requirements as aids to the movement of traffic under blackout conditions can be met by (a) screened traffic signals; (b) warning signs; (c) direction signs; (d) distinguishing marks on curbs and associated features as trees, posts, etc.; (e) obstruction lighting. Full details of these "aids" are given in the data issued by ARP London. (DPR).

4335. Road transport and the war.

THE RAILWAY GAZETTE (London)

1940, March 8, Vol. 72, No. 10, pp: 344-346, charts.

Three charts are shown giving percentage of accidents occurring in blackout since the beginning of the war. The greater number of casualties were aged pedestrians and children. A 20 m.p.h. speed limit at night in built-up areas, and improvements in street lighting have improved conditions. (DLC)

4336. Tramcar lighting.

TRANSPORT WORLD (London)

1939, December 2, Vol. 86, No. 2766, p. 274.

A letter to the editor concerns the difficulties encountered by operators of tramcars under present blackout conditions. Approaching motorists are likely to mistake tramcars for

## BLACKOUT - TRAFFIC HAZARDS.

motor vehicles, and try to have them pull over to the side of the road. The writer insists upon some distinctive lighting for this type of vehicle. (DLC)

## BLACKOUT - VENTILATION

4337. Factory ventilation in the blackout (Factory form 301)  
Great Britain. Air Raid Precautions Department.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 3d.10¢)

4338. Richtlinien fuer Lüftung waehrend Verdunklung in Fabriken.  
(Directions for ventilation during blackouts in factories.)  
DEUTSCHE BAUZEITUNG (Berlin)  
1939, December, Vol. 52, p. 920.

Since blackout regulations prohibit the opening of windows during the blackout, adequate ventilation must be provided. In factories where air deterioration is caused by the workers themselves and by the lighting, the renewal of air is effected by specially constructed boxes, inserted in outer walls of the buildings. In factories where the air deterioration is caused by the character of the work itself or by the use or treatment of war material, the change of air must be effected by means of regular air shafts with a diameter of not less than 25 cm. In buildings with several stories, such air shaft must be provided for each story. These air shafts have about 3 m. above each floor, a lateral opening of 20 x 50 cm., which is closed by a valve. All shafts reach beyond the roof.  
(DLC)

4339. Ventilation (natural and artificial) in relation to the blackout.  
Murray, E. W.  
CHEMISTRY AND INDUSTRY (London)  
1940, March 22, Vol. 60, No. 12, pp. 189-193.  
A paper on the Health Provisions of Factories Act of 1937, the reduction of health hazards, and the improvement of ventilation. (DLC)

BOMB - PROOF SHELTERS. See SHELTERS, BOMB - PROOF.

## BOMBS

4340. Air raids and protective construction.

Smith, Sherwood, B.

THE MILITARY ENGINEER (Washington, D. C.)

1941, July-August, Vol. 33, No. 190. pp. 287-293

In a discussion of aerial bombs and the protection necessary to minimize damage, seven types of bombs are described: armor piercing, demolition, fragmentation, aerial mine, light incendiary bombs, and gas bombs. A chart gives the following data on each type: usual weight, range of weight, sectional pressure, per cent of explosive, terminal velocity, penetration, blast, targets. A graph illustrates the ballistics of demolition bombs. The author describes effects of bombs upon striking (1) earth, (2) concrete, (3) streets and buildings. Building plans are given for the following types of shelters: (1) buried, splinterproof for 6 persons, (2) semi-buried, splinterproof for 6 persons, (3) bomb resistant for 200 persons, (4) bomb resistant for 100 persons. (DLC)

## 4341. Bombs and bombing.

Ley, Willy.

1941, New York, Modern Age Books, Pp. 121, illus., graph, table, bibl.

Bombs-history, types, mechanism and effectiveness of, methods of dealing with, counter measures, etc. Bombing - techniques in, effectiveness of, counter measures, etc. Poison gases - description, early history, classification, effectiveness of, counter measures, decontamination treatment of gas casualties, etc. (DLC)

4342. Notes on the destruction of unexploded shells and aerial bombs; the control of incendiary bombs, and the construction of air raid shelters.

Fraser, L. G.

THE ENGINEERS JOURNAL (Sydney)

1941, July, Vol. 13, No. 7, p. 179. (DPR)

4343. Terminal velocities of bombs

ENGLISH MECHANICS (London)

1940, January 26, Vol. 27, No. 692, p. 248.

Data on the terminal velocity of bombs based on a paper by Prof. H. Chatley, in the current Journal of the Junior Institution of Engineers. (DLC)



## BOMBS, HIGH EXPLOSIVE

4344. High explosive instructional diagram.  
Great Britain. Air Raid Precaution Department.  
1940, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1s 30¢)
4345. Likvidatsiia nerazorvav shikhsia aviabomb (Rendering unexploded and "delayed action" bombs harmless)  
Voronin.  
VESTNIK PROTIVOVOZDUSHNOI OBORONY (Moscow)  
1938, No. 4, pp. 38-43, illus.  
The rehabilitation squad of an ARP unit has the following task: (1) demolition of unexploded bombs; (2) blasting of walls and parts of buildings which have been bombed and which endanger the safety of the population; (3) re-establishment of telephone and electric communications, water supplies, sewerage, and heating; (4) clearance and re-establishment of roads and bridges; (5) repair of shelters and refuges. Stress is placed upon the demolition and disablement of unexploded bombs, how to find them, how to tell the type and makeup of bombs, the preparatory steps of demolition, digging bombs out of ruins, and transferring them to a safe place. (DLC)
4346. The physics of air raids.  
THE ENGINEER (London)  
1941, April 18, Vol. 171, No. 4449, p. 262.  
To provide a rational means for minimizing the danger of raids, the physical aspects of air raid damage have been studied. Among other things it is observed that the reaction on neighboring bodies of liberated energy from an explosive does not depend on the mechanical properties of these bodies; that the character of the shock waves changes; that some of the terror attached to bombs is due to the stories of people being killed at great distances without any physical injuries by the mysterious effect of blasts; that aside from blast the main damage caused by bombs is due to splinters and earth shock. (DLC)

## BOMBS, INCENDIARY

4347. Chemical extinguishers for incendiary bombs.  
Guise, Arthur B.  
NATIONAL FIRE PROTECTION ASSOCIATION. QUARTERLY (London)  
1941, October, Vol. 35, No. 2, p. 137.  
In copying with light magnesium incendiary bombs a certain

## BOMBS, INCENDIARY

type of fire extinguisher can be effectively used. .  
 Burning magnesium cannot be extinguished by the usual type; explosive reactions may occur as a result of its use. A very fine spray - such as produced by inserting the ball of the thumb into the stream of the water-filled or soda-acid fire extinguishers, or the adjustable nozzle of a garden hose, or the English type stirrup pump - is very effective for extinguishing magnesium bomb fires and controlling incendiary bomb fires.. (DLC)

4348. Incendiary bomb fires.

Guise, Arthur B.

VOLUNTEER FIREMAN (Boston)

1941, September, Vol. 8, No. 9, pp. 6-7

Techniques for handling bombs have been modified as a result of experiments with incendiaries. The stirrup pump is not the best spray for magnesium bomb fires, nor is it possible to snuff out incendiary bombs with a snuffer. It has been further proved that water used on burning magnesium results in a chemical reaction which may be harmful to the individual attempting to extinguish the fire. A solid stream of water on burning magnesium may cause an explosion blowing particles of metal over a radius of 10 to 20 feet. To avoid explosions when dealing with magnesium bombs, use water in spray form. Some materials found effective in smothering magnesium bombs are talc, ashes, asbestos, and sand. The latter has proved more effective, however, as a special powder used in extinguishing burning metal. (DLC)

4349. Incendiary bombs instructional diagrams. (1) Typical kilo magnesium (electron) incendiary bomb; (2) Typical roof construction. (misc).

Great Britain. Air Raid Precautions Department.

1940, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1s. 6d. 45¢)

4350. Incendiary bombs and fire precautions (Handbook 9)

Great Britain. Air Raid Precautions Department.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 6d. 15¢)

## BOMBS, INCENDIARY

4351. Sprinkleranlagen für den Luftschutz (Sprinkler arrangements for protection from the air)  
 Huebner, Heinrich  
 ZEITSCHRIFT DES VEREINS DER DEUTSCHEN INGENIEURE (Berlin)  
 1934, February, Vol. 78, No. 7, p. 216, illus.  
 The possibilities of sprinkling systems as a defense against incendiaries. (DLC)

BRIDGES. See PUBLIC BRIDGES

BUILDINGS. See STRUCTURAL PRECAUTIONS

BUILDINGS, PROTECTION OF. See also SANDBAGGING: STRUCTURAL PRECAUTIONS

4352. ARP protective walls.  
BUSINESS (London)  
 1941, January, Vol. LXXI, No. 1, p. 26.  
 Information revealed by the Ministry of Home Security shows that the function of protective walls is to give personnel protection from splinters, not from blast. (1) Full height walls are useful as fire stops, and limit blast damage to roof, but may be blown down by a mild blast, and will form missiles from a near hit. They should be of reinforced concrete or steel frame independent of shed structure. (2) Half height walls (6 ft. - 8 ft.) protect machinery or plant specially vulnerable to splinters though they will form missiles from a moderately near hit, and may be blown down by a fairly mild blast. They should be built in box form or 3 sided. (3) Dwarf walls (2 ft. 6 in. - 4 ft. 6 in.) give necessary protection to personnel and some protection to the plant. (DLC)

4353. Preservation of historic buildings.  
THE BUILDER (London)  
 1941, March, Vol. CLX, No. 5118, P. 241  
 Architects are being appointed by the Ministry of Works to restore historic buildings damaged in air raids.  
 "Valuable fragments and fittings, such as panelling, fire



## BUILDINGS, PROTECTION OF

to restore historic buildings damaged in air raids.  
 "Valuable fragments and fittings, such as panelling, fire places and carved beams should be saved as quickly as rescue work has been completed."

## BUSINESS, See COMMERCE AND INDUSTRY

## CAMOUFLAGE

4354. Architects and scientists develop camouflage.

ENGINEERING AND CONCRETE RECORD (Toronto)

1940, November, Vol. 53, No. 36, p. 36.

The staff, including artists, engineers, architects, chemists, etc., of the Civil Defense Camouflage Organization is both designing camouflage and doing large scale research on the problem of invisibility. (DLC)

4355. Camouflage in nature and in war.

Cott, H. B.

THE ROYAL ENGINEERS JOURNAL. (London)

1938, December, Vol. 52, pp. 501-507, illus. diags. photos.

The optical principles upon which concealment depends: the methods by which concealment has been achieved in nature; the bearing of these principles and devices upon the important problem of applied camouflage. The first optical principle is that of color resemblance. The second optical principle is that of countershading. When an animal or any other solid body is observed out of doors in the open, its upper surface is more brightly illuminated than its under parts and the effect of this top lighting is to lighten the tone of the upper parts, while the shaded lower surfaces appear darker. By countershading the upper surfaces, and counterlighting those beneath, using properly graded tones, it is possible to counteract the effects of light and shade, and thus to render a rounded body apparently flat. Illustrations show the proper and improper methods of applying paint to guns under this principle. A third principle is that of disruptive coloration, the use of irregular patches of contrasted colors and tones to destroy the appearance of form. The effect of a disruptive pattern is greatly strengthened when some of its components closely match the background, while others strongly differ from it. The principle of disguise by patterns is further intensified

## CAMOUFLAGE

when the tones of greatest contrast occur adjacent to one another. For contour obliteration, it is essential that the pattern cut across rather than run along the contour. A further step toward invisibility is taken when the disruptive design more or less closely resembles the background against which it is seen. Another problem is that of shadow obliteration, which is described chiefly through examples from nature. (DLC)

4356. Common sense of camouflage attack.

McKenzie, Al.

THE MILITARY ENGINEER (Washington, D. C. )

1934, July-August, Vol. 26, No. 148, p. 288

The author thinks camouflage is largely a question of brains and experience rather than materials. The article describes camouflage methods to conceal preparations for attack. (DLC)

4357. Field camouflage and aerial photography

THE MILITARY ENGINEER (Washington, D. C. )

1932, January, Vol. 24, No. 133, p. 30.

The use of color filters in aerial photography necessitates a change in camouflage to overcome detection of certain colors when such filters are used. The value of color filters discovered by the Germans, led to their introduction in the World War, and to some knowledge of counter-measures by the Americans camouflage service. The use of color filters has by no means halted work by the camouflage service, but has rather made interesting the problem of coloration for concealment. (DLC)

## CAMOUFLAGE, ARCHITECTURAL

4358. Die besonderen Aufgaben des Luftschutzes fuer die Landschule.

(The special problems of ARP for country schools

Raumer, Albert

LUFTFAHRT UND SCHULE (Berlin)

1940, September, Vol. 5, No. 12, p. 123.

Camouflage of buildings must be taught to school children. There must be bright outside walls and new buildings must

## CAMOUFLAGE, ARCHITECTURAL

be roofed with glazed tiles of brown, green, or gray.  
The neighbourhood should be well masked with shrubbery.

4359. Camouflage.

BUSINESS (London)

1941, January, Vol. LXXI, No. 1, pp. 26-28.

Camouflage of industrial buildings in Britain is a recurrent expense, because in the English weather camouflage lasts only a few months. (DLC)

4360. Clay building materials for air raid protection.

TONINDUSTRIE - ZEITUNG (Berlin)

1937, Vol. 61, pp. 719-720.

For the concealment of buildings, according to Knothe, materials with matt, regular surfaces and colors blending with those of the surroundings should be used. Suitable colors are dark green, brown, and greyish-blue. Roofing tiles and facing bricks of those colors can be most easily produced by the use of engobes of the same material as the clay body. Suitable pigments are chromium oxide for green tiles, brownstone for brown, and cobalt oxide for greyish blue tiles. If a re-burning clay is used the product will be very dark in color; a yellow firing clay will give somewhat lighter shades. Where grey tiles are not desired, a white-clay should be used and a pigment added. Brief consideration is given to composition, fineness, application of the engobe, etc.

(Building Science Abstracts, 1938, No. 426) (DLC)

4361. Tarnung und Verdunklung als Schutz gegen Luftangriffe (Camouflage and darkening as protection against air attack)

Knothe, H.

1936. Berlin, Wilhelm Ernst und Sohn. Pp. 44.

The first section of this booklet deals with the effective concealment of buildings. Recognition of particular buildings from the air can be made difficult or impossible by suitable selection of the site, utilization of special features of the landscape, special design of new buildings, and adaptation of the design of new buildings to that of existing buildings in the same locality. Other methods are choice of color suitable to the environment, planting the ground with grass, bushes, etc. and the use of such means as nets, smoke screens, and "dummy" buildings. The erection of particularly characteristic or imposing buildings, intended to attract attention, as has hitherto



## COMOUFLAGE, ARCHITECTURAL

been usual for important public buildings, should be discontinued in view of their conspicuousness. The greater the area covered by a building, the more prominent the structure and the more difficult its concealment. The second section of the booklet deals with recommended practices in the reduction of lighting as a means of protection against air attack by night. Here consideration is given to precautions to be observed when attack is imminent. Two stages are recognized: (1) restricted illumination, practically constant during wartime, and (2) the "blackout", when attack is imminent. (DLC)

## CAMOUFLAGE - AVIATION

4362. Camouflaged runways.

THE CANADIAN ENGINEER (Toronto)

1940, February, Vol. 78, No. 2, p. 18.

Runways, laid out and constructed so as to appear like side roads leading to a main highway, take on the semblance of a concrete highway when covered with a thin layer of white sand; darker color is used to simulate an asphalt public road. Hangars, located somewhat apart from these areas and surrounded by trees, seem from the air to be large barns. (DPR)

## CAMOUFLAGE - BIBLIOGRAPHY

4363. Camouflage; a list of references.

U.S. Library of Congress. Division of bibliography.

1940, Washington, D.C. Library of Congress. Pp. 12.

An author list consisting of 158 items, mainly American and English. Library of Congress call numbers supplied. (DLC)

## CAMOUFLAGE, CIVILIAN

4364. Industrial camouflage.

THE FOUNDRY TRADE JOURNAL (London)

1939, June 22, Vol. 60, No. 1192, p. 558.

Col. F. J. Wyatt, addressing the Institution of Civil Engineers on defense against aerial attack, says "camouflage

## CAMOUFLAGE, CIVILIAN

should really include all stratagems adopted in war to deceive the enemy, to make the bombing of a specific target as difficult as possible", and to force the enemy to bomb an area rather than a particular object. He speaks of the difference in appearance from the air between factories and their surroundings, discussing two particular features: form; and color and tone. Camouflage paints, the methods of applying, the addition of suitable materials to reduce any tendency to shine, and the durability of paint used were discussed by the speaker: (DLC)

4365. Paint and camouflage.

THE DECORATOR (London)

1938, Vol. 37, pp. 47-48

The potential value of camouflage has become greater with the changed objectives of modern warfare; such as docks, lines of communication, localities containing factories producing food, power and war materials, and even the civilian population. Disguise or camouflage can do much to make these vulnerable points difficult of discovery by air raiders. Disguise should be applied not only to points of obvious military importance, but also, as far as possible, to make landmarks, such as gasometers, cooling towers, water towers, etc., which have only limited military importance but may be of considerable use as aerial sign posts. The scope and technique of camouflage, must therefore, spread far beyond that common in the last war. Most military objectives and useful position indicators have hard, regular shaped outlines, and no amount of camouflage can make a whole town look like a country landscape. It is possible, however, to change the very obvious outlines of a gasometer or water tower, or even of a large factory in the country. Suggestions for such change include the erection of temporary screens for the hanging of netting over the faces of the structures and holding it away from the sides and tops with rough, wooden framework to break up rigid outlines. The choice of treatment rests largely with the area to be covered, the type of building, etc., and suggestions are made regarding stocks of water-resistant paints and distempers of varying tints that may be quickly and cheaply applied. In most cases it is preferable to use lead paints, because the latter tend to dry unduly hard and flake. In all cases a matt finish is essential, especially for oil tanks exposed near the seacoast, where glare is likely to occur with the rising or setting sun.

(Building Science Abstracts, 1939, No. 210) (DLC)

## CAMOUFLAGE - MATERIALS

4366. Camouflage with colored cement.

Green, J. Singleton.

THE SURVEYOR (London)

1940, November 8, Vol. XCVIII, No. 2546, pp. 229-231 (DPR)

4367. Domestic paper for hasty camouflage.

Rodyenko, Peter.

THE MILITARY ENGINEER (Washington, D. C.)

1941, October, Vol. 33, NO. 192, p. 438.

Paper as a camouflage material has been used by Chinese since time immemorial. During World War I the Germans used paper extensively as a substitute material for sandbags and for camouflage. No paper was used in Allied Armies, because they experienced no shortage of cotton or textile fabrics; and no experimentation has been made with paper camouflage by the United States for twenty years. The author of this article carried on some experiments with a fabric woven from paper pulp in a manner similar to that used in the manufacture of Japanese imitation "Panama". This material was adopted by the United States army because it served well as a substitute for strategic material. Some time ago the writer received a sample of domestic paper that appeared to offer interesting possibilities. A recent experiment with this paper had very satisfactory results. (DLC)

## CAMOUFLAGE, MILITARY

4368. The art of camouflage.

Chesney, Clement H. R.

1941, London, Robert Hale. Pp. 252, illus.

This study of camouflage is divided into three sections: first, the study of natural or artificial camouflage (up to September, 1941); second, the story and practice of artificial camouflage during the World War I and up to the beginning of the present war; third, "strategic camouflage or the camouflage of military intention." (DLC)

4369. The new anti-tank gun.

THE CAVALRY JOURNAL (Richmond)

1939, January-February, Vol. XLVIII, No. 1, p. 66, photos.

Aside from a full description of other types of effective



## CAMOUFLAGE -- MILITARY

equipment, this article describes the protective shield with brackets for the attachment of camouflage material which, when blended with gun position, will conceal it from observation by enemy aircraft. The photographs show positions of the gun. (DLC)

## CAMOUFLAGE -- VEHICLES

4370. Concealment of motor vehicles.

Arnold, R. R.

THE MILITARY ENGINEER (Washington, D.C.)

1939, September, Vol. 331, p. 329.

Improvement in aerial photography makes concealment of war machines--a problem of great importance--more difficult, and former methods of camouflage have had to be abandoned. (DLC)

CANTEENS, See COMMUNAL FEEDING

## CHILDREN

4371. Care of children becoming orphans as a result of enemy action.

JUSTICE OF THE PEACE (London)

1941, August 2, Vol. 105, No. 31, pp. 423-424.

The government has decided that the State, through the Ministry of Pensions, should assume special responsibility for the wellbeing of pensioned orphans. The Minister of Pensions is especially interested in orphans and those suffering from neglect. Details of his duties are given. The Chief Regional Officer of the Ministry of Pensions is to be in charge of child welfare work. Detailed information is given to local authorities by the Chief Regional Officer. Reception area authorities are to arrange for some suitable persons to supply news to children who have lost their parents. (DLC)

4372. Central association for mental welfare.

MENTAL HEALTH (London)

1941, January, Vol. 2, No. 1, pp. 17-18.

The Central Association of Mental Welfare was compelled to

## CHILDREN

open an additional emergency home for defective children. This addition was built mainly to take care of the mental defectives whose condition resulted from aerial bombing. Of the 698 cases dealt with, 195 are considered to be directly attributable to war conditions. Both the social worker and the physician are doing a fine job in helping to restore the patients' mental health (DSG)

4373. Child guidance council.

MENTAL HEALTH (London)

1941, January, Vol. 2, No. 1, p. 18.

This article is a report of the work done by the Child Guidance Council for children affected by enemy action. The council is stressing the work of child psychologists and psychiatrists. Efforts are also being made to introduce knowledge of the principles of child psychology into the curricula for orthopaedic nurses. (DSG)

4374. Looking after the under-fives.

THE LANCET (London)

1941, June, Vol. 240, No. 6146, p. 775.

The disturbance of family life created by war conditions has led to the extensive establishment of nurseries for small children. (DLC)

4375. The New war's newest medical problem.

NEW YORK STATE JOURNAL OF MEDICINE (New York)

1941, October 15, Vol. 41, No. 20, pp. 2080-2081.

A new problem, the child victim of bombing, has been presented to the medical profession of England, and methods have ~~had to be~~ devised for treatment of bomb-shock in children. The treatment is somewhat similar to that of adults, but modified in accordance with the Child's physical and mental capacity. The usual symptoms are loss of normal equilibrium, inability to walk erect, extreme nervous tension, and uncontrolled sobbing when the air raid signal sounds. Steps toward treatment are the conversion of country homes into refuges and rehabilitation centres, with the services of skilled doctors and nurses, rest, controlled exercise, a friendly environment re-educating the child to the normal behavior of the body, the use of hobby horses, rocking animals, and table games to regain coordination of brains and hands. Children recover rapidly under this program and seldom show symptoms of relapse. (DSG)

## CHILDREN

4376. Parliament and public health.THE MEDICAL OFFICER (London)

1940, June 22, Vol. 63, No. 1665, p. 220.

The Minister of Health has made it clear that children between the ages of three and five would be completely provided for and given nursery service. He also observed that sanitary conditions were being guarded in billeting these children. The Ministry of Health has provided free or cheap milk for the evacuees, even allowing milk producers to supply "unsafe" milk (not pasteurized). (DLC)

4377. Protection of children in Great Britain in wartime.PUBLIC HEALTH (New York)

1941, November, Vol. 31, No. 11, p. 1128.

Both before and during the war period progressive improvement has been made in every phase of child protection: health, welfare, education, and recreation. This is true of bombed cities and the relatively safe areas where evacuated children have been sent. In cities under bombing, protective measures are taken for the children remaining. Shelters are provided for school buildings and respirators distributed to children. Communal feeding and rest centers are established for bombed-out families. (DLC)

4378. School medical inspection notes.THE MEDICAL OFFICER (London)

1940, June 22, Vol. 63, No. 1665, p. 218.

Much criticism has been directed at the School Medical Service because of the large number of children, generally unclean and with verminous heads, entering the evacuation centers. But this entrance occurred at the end of summer, when children are more likely than at any other time to be infested with nits and lice. Blame for this condition rests more upon the parents than upon the medical group, who have had no opportunity for making examinations. It is suggested that a law be enacted to punish parents whose children are in such a condition. (DSG)

4379. Shelter life.JUSTICE OF THE PEACE (London)

1941, April 26, Vol. 105, No. 17, p. 233.

Insufficient parental control of children and undesirable



## CHILDREN

acquaintances made on the streets have brought children under 17 years of age to juvenile courts. Policemen and policewomen, as well as local authorities are afforded an opportunity for social service work. (DLC)

4380. Verminous evacuees.

THE MEDICAL OFFICER (London)

1940, June 22, Vol. 63, No. 1665, p. 218.

Dr. W. K. Dunscombe of the Isle of Ely states that the arrival of numerous children in rural billets was the signal for an outburst of abuse against the School Medical Board because of the children's lack of cleanliness. Verminous heads and uncleanness had been a commonplace at the clinics, and evacuation simply drew the attention of the public to these conditions. Blame should be put on the Board of Education rather than the School Health Service. The law dealing with uncleanness is a farce, and should be amended to provide for the fining of parents who allow their children to become infested with vermin. (DSG)

4381. War strain in evacuated children.

THE BRITISH MEDICAL JOURNAL (London)

1941, January 25, No. 4177, p. 128.

The abnormal strain imposed on children during wartime offers a serious problem to the Ministry of Health. Although each reception area has trained personnel and a child guidance officer, it is found that the mental strain on evacuated children is worse than that on those remaining in the bombed areas. This condition is due principally to the breaking up of the homes. The Ministry of Health wonders if this mental strain will affect the individual when he reaches adolescence and adulthood and if this strain is not worse than the physical harm that might be done if they were left at home. (DSG)

## CLOTHING

4382. Clothing for British air raid victims.

CANADIAN TEXTILE JOURNAL (Montreal)

1940, December 20, Vol. 57, No. 26, p. 26.

Donations of \$65,000 worth of wearing apparel have been sent free of charge by the National Associated Women's Wear Bureau to air raid victims in Great Britain. (DLC)

## COMMERCE AND INDUSTRY

4383. Bombing hours and raid warnings.THE ECONOMIST (London)

1940, September, Vol. 139, No. 5064, p. 346.

Voluntary extension of banking hours on days when business was interrupted by air **raid warnings had not given way** to more drastic methods. In general it is left to the discretion of branch managers how long after banking hours the bank should remain open to customers inconvenienced by raid warnings. (DLC)

4384. Damaged premises.BRITISH AND COLONIAL PRINTER AND STATIONER (London)

1941, January 30, Vol. 128, No. 641, p. 41

In a law suit involving the liability of an employer to continue to pay wages to his staff even though his premises were destroyed as a result of enemy action, it was adjudged "that the damaging of premises by enemy action does not result in the automatic termination of contracts or agreements between employers and employees, and that wages continue to be payable until such time as customary notice is given." (DLC)

4385. Paying wages during warnings.BUSINESS (London)

1941, April, Vol. 71, No. 4, p. 18.

Three considerations govern the paying of wages during a warning signal; (a) separation of paying stations; (b) spreading of pay hours; (c) distribution of wage packets in workshops and shelters. During raids, wage envelopes are distributed by many firms in the various shelters. Others spread their time over the morning and afternoon periods. Long queues are not permitted. (DLC)

4386. Payment for lost time.LABOUR (London)

1940, December, Vol. 3, No. 4, p. 685

The question of compensation for time lost as a result of enforced stoppages of work due to enemy air raids has been a controversial problem between the Employer's Federation and the Union. The employers want consideration of the question postponed while the union is pressing for action. (DLC)

## COMMERCE AND INDUSTRY

4387. Raid warning arrangements.TRADE AND ENGINEERING (London)

1940, October, Vol. 47, No. 920, p. 9.

The interruption to the business of the banks caused by air raids has caused them to introduce certain operating procedures to compensate for such disruption. Chief among these are extending closing hours when air warnings have interfered with business activities and making concessions to customers whose business has been interrupted by raid warnings. (DLC)

4388. Window sign.ELECTRICAL TRADING AND RADIO MARKETING (London)

1940, July, Vol. 11, No. 129, p. 25.

During blackout shopkeepers are permitted the use of only one window sign, not more than 3 ft. wide by 2 ft. high and with not more than 144 square inches of luminous lettering or symbols. Lighted letters or symbols must be on a dark background; signs must be on the ground floor only, and must not project from the surface of the building. (DLC)

## COMMUNAL FEEDING

4389. Blitzes bring communal feeding for Britain

Trevor, John S.

FOOD FIELD REPORTER (New York)

1941, March 17, Vol. 9, pp. 1, 13.

It is estimated that between 75,000 and 100,000 people are being fed in centers in Britain every day. Information is given here regarding the menus and costs. (DLC)

4390. Communal feeding in wartime.

Great Britain. Women's Voluntary Services for Civil Defense.

1940, London, H. M. Stationery Office. Pp. 70, bibl. (DLC)

4391. Communal meals.

Brailsford, H. N.

NEW STATESMAN AND NATION (London)

1940, December 28, Vol. 20, p. 672

"War has this compensation: that it smashes individualist tradition and compels men to realize that they form a community. A most promising development has been the



## COMMUNAL FEEDING

growth of communal meals." Where and how these meals are served, and the economics of this new municipal venture are described in this article. (DLC)

4392. Communal meals in England.

Brailsford, H. N.

NEW REPUBLIC (New York)

1941, March 24, Vol. 104, pp. 400-401.

All over England in the poorer districts, municipal restaurants have been opened for the workers and meals are served for 10 cents. These meals are available to all. (DLC)

4393. Emergency feeding plans.

MONTHLY BULLETIN OF ROAD INFORMATION (London)

1941, March, No. 49, p. 337.

Eighteen lorry convoys, forming units of 8 vehicles and 5 motorcycles each are planned for the feeding of heavily bombed towns. These food divisions on wheels, with bases at strategic points throughout the country, will speed rations wherever needed and each will be capable of supplying about 12,000 emergency meals. Both volunteer and paid drivers will operate motorcycles. (DPR)

4394. Feeding.

THE ELECTRICAL AGE FOR WOMEN (London)

1941, Summer, Vol. 3, No. 23, pp. 786-787.

All factories having over 250 employees are required by an order of the Ministry of Labor to provide canteens. The smaller factories are to be grouped together, with well equipped canteens established by ARP centers. The nutritional aspects of communal feeding and the use of electricity in communal feeding are discussed. (DLC)

4395. Die Gemeinschaftsverpflegung in gewerblichen Betrieben Während des Kriegs. (Community feeding in industrial plants during the war)

ARBEITSSCHUTZ-UNFALLVERHÜTUNG - GEWERBEHYGIENE (Berlin)

1940, June 15, No. 6, pp. 174-178.

According to an order from the Reich Minister of Labor, arrangements must be made for serving hot meals to industrial workers. In each unit plans are drawn up under

## COMMUNAL FEEDING

the guidance of the building inspector and the superintendent. Questionnaires were sent out to all workers to determine the approximate number who wished to be served. Arrangements had to be made for the construction of dining rooms, kitchens and store rooms at each unit. When such arrangements were not feasible, improvised means for serving were employed, like those used by the field trains in the army. Provisions were made for equipment, quantity and quality of food; length of time for serving; prices to be paid; sanitary inspections; procedure for obtaining food from the Food Department. (DSG)

CONCRETE SHELTERS, See SHELTERS, CONCRETE

CONSTRUCTION OF SHELTERS, See SHELTERS - DESIGN AND CONSTRUCTION

## CREMATION

4396. Cremation of war victims.

THE MEDICAL OFFICER (London)

1940, July 27, Vol. 64, No. 1670, p. 27.

The difficulty in the disposal of victims of air raids, is that medical certification for cremation would be unworkable under emergency conditions. In the interest of the public, this matter has been clarified under Defense Requisition No. 30, which waives the requirement of medical certificates for the cremation of civilian war victims and directs that no obstacle be placed in the way of an application for the cremation of a war victim. (DSG)

DECONTAMINATION, See GAS -PRECAUTIONS

DOCUMENTS, PROTECTION OF. See also ARCHIVES; LIBRARIES

4397. Air raid precautions for record offices, libraries, museums.

Meyer, Herbert

THE LIBRARY ASSOCIATION RECORD (London)

1938, May, Vol. 40, No. 5, pp. 204-209.

Adoption of the most comprehensive and efficacious

## DOCUMENTS, PROTECTION OF

- precautions against air attack is vital to all those institutions such as offices, museums, and libraries entrusted with the care of valuable books and works of art. The responsibility for such protective measures is borne by the air raid precautions officer of the institution in question. (DLC)

DRAMA. See FICTION AND DRAMA

DRUGGIST. See PHARMACY

DWELLINGS, PROTECTION OF. See also BLACKOUT - PRIVATE DWELLINGS.

4398. Die Möglichkeit Städte-baulicher Massnahmen zum Schutze von Wohnsiedlungen gegen Angriffe aus der Luft. (The possibility of architectural measures for protection of dwellings)

Lehwess, W. and Winter, F.

TECHNISCHES GEMEINDEBLATT (Berlin)

1935, July, Vol. 38, No. 7, pp. 178-179.

The necessity for these plans arose from the belief that in a future war the civilian population and their homes would be endangered. The proposed protective measures are: (1) New residences are to be unattached and situated in outlying sections; (2) Streets are to be laid out according to prevailing wind direction; (3) Houses should be widely spaced and built on loose earth; (4) No residential district should be situated in close proximity to an industrial district; (5) Plans must be made for essential supplies; (6) Preference is given to inter-city buses and subways; (7) A large number of drinking fountains should be situated in the city; (8) Railway stations should be decentralized; (9) Necessary traffic arrangements must be observed during a blackout; (10) Landscaping must serve air defense measures and camouflage; (11) Regulations for building guards should be prescribed. (DSG)

4399. The "pebble mattress" a simple defence measure.

Southwell, R. V.

THE ARCHITECT AND BUILDING NEWS (London)

1939, October, Vol. 160, No. 3694, p. 7.

Fastening two flat layers of wire to a wooden frame, allowing a four-inch space between, which is filled with brick or gravel pebbles, has proved a simple protective method for a room. The pebbles should be heavy and round,



## DWELLINGS, PROTECTION OF

so that air space may be left. In order to make allowance for the netting to bulge in the event of a hit, it should not be allowed to bulge under the mere weight of the pebbles. (DLC)

4400. Podgotovka zhilogo doma k PVKHO (Preparation of a residence for aero-chemical defense)

Ivanov, B.

KHIMIYA I OBORONA (Moscow)

1937, December, No. 10-13, p. 10.

Preparation of living quarters for defense against air and gas attacks must proceed according to a definite plan. First must come mapping of the surrounding territory, the house, marking its elevation, its situation in regard to other buildings, parks, trees, etc., with a view to its vulnerability to fire, gas and other attack. The residents must become familiar with such a map. The following steps in carrying through the plan must be followed: (1) organizational and financial measures, familiarize tenants with the plan, daily contact with ARP headquarters; (2) ARP training of residents; (3) forming and training of defense groups, providing them with ammunition and educational material, (4) instruction concerning air raid and gas attack warnings and rules; (5) blackout practice. (DLC)

4401. The workshop and ARP  
ENGLISH MECHANICS (London)

1939, October 13, Vol. 27, No. 677, p. 13. diags.

This article describes the author's method of blacking-out his home and workshop. This can be done with ordinary house tools and requires only a small amount of time. To blackout the kitchen doors large pieces of plywood were cut; enough to cover the windows and entrances with about 1 inch overlap. Brass buttons were used to fasten the blackout screens to windows and doors. It required only a few seconds to put up these blinds. (DLC)

EDUCATION. See also SCHOOLS

## EDUCATION

4402. The British universities and the war.

Conant, James Bryant

THE AMERICAN OXONIAN (Menasha, Wis.)

1941, July, Vol. 28, No. 3, pp. 133-138.

Some notes on the current situation show that on the whole the English universities have met very little physical impairment on account of the war. London University was evacuated and some of its buildings were severely damaged. The average enrollment decreased. It is deemed necessary that universities be continued on a restricted basis as a vital part of the war effort during the coming academic year and ensuing years of the war. (DLC)

4403. London universities' raid damage.

Eason, L. H.

ARCHITECT AND BUILDING NEWS (London)

1941, August 8, Vol. CLVII, No. 3790, p. 76.

The amount of damage done to universities, schools, colleges, and hospitals during severe and widespread air raid attacks on London. (DLC)

4404. Men teachers and national service (Circular 119)

Great Britain, Scottish Education Department.

1939, June 1, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)

4405. Salisbury and South Wilts Museum: special wartime classes for evacuees and Salisbury children.

Stevens, Frank.

THE MUSEUMS JOURNAL (London)

1940, April, Vol. 40, No. 1, pp. 9-10.

The Salisbury Museum, concerned about the interrupted education of both local and evacuated children, established, in consultation with education authorities, museum classes for children ranging in age from 14 upwards. (DLC)

4406. Teachers and national service (Circular 118)

Great Britain, Scottish Education Department.

1939, February 21, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)

ELECTRIC PLANTS. See PUBLIC UTILITIES.

EQUIPMENT. See also BLACKOUT - EQUIPMENT; CLOTHING; SHELTERS - EQUIPMENT

4407. Anti-concussion bandeau for air raids.

THE CANADIAN MEDICAL ASSOCIATION. JOURNAL (Montreal)

1940, October, Vol. 43, No. 4, p. 384.

The bandeau is made of soft aerated rubber with numerous inter-communicating air cells and is covered with stockinet (jersey). It is designed to cover the frontal region, the temples, the ears, and the back of the skull. It weighs 2 or 3 ounces, is made in four sizes, and can be slipped over a gas mask. It affords no protection from splinters. (DSG)

4408. The ARP gas heated boiler.

THE PLUMBER AND DECORATORS JOURNAL (London)

1939, June 1, Vol. 61, No. 725, p. 141, illus.

A special gas-heated boiler for decontaminating clothing-impregnated by wartime gases-has been recently designed and introduced by Radiation Ltd., Essex Works, Ashton, Birmingham 6. The boiler is rigidly built of cast iron, and different types of counterbalance gear for the lid are available to suit local conditions. It has many outstanding features and is specially designed to conform to standards suggested by the government and local ARP authorities. (DLC)

4409. ARP respirator telephones.

FOUNDRY LAY-OUT AND BUILDINGS (London)

1940, February, Vol. 62, No. 1227, p. 154.

For certain members of public ARP services, respirator telephones will be provided free by the government because of the possibility that during gas attacks switchboard operators may have to continue working at their posts. This instrument consists of a standard civilian duty respirator fitted with a special microphone for use with a telephone head gear receiver. Provision is made for connecting the instrument to a telephone circuit by means of a plug and socket. The Post Office grants permission for the use of this instrument, sets the specifications and designs, approves the type, but accepts no responsibility for its efficiency. (DLC)



## EQUIPMENT

4410. Mantle for Mars.

Schwarz, Edward R.

TECHNOLOGY REVIEW (Boston)

1941, November, Vol. 44, No. 1, p. 21.

To find new fibers to replace the old in serving new uses for defense requirements demands the textile manufacturers' greatest ingenuity. A tremendously increased quantity of fire-hose, which is required for successfully combating fires resulting from incendiary bombs, is one of the most pressing needs. Gas masks still depend upon textile fabrics. Inexpensive fabric in large quantities is necessary to meet requirements. (DLC)

4411. Materials in relation to ARP.

Astbury, A. R.

SOCIETY OF CHEMICAL INDUSTRY, CHEMISTRY AND INDUSTRY. JOURNAL (London)

1939, Vol. 58, pp. 41-45.

Most non-porous materials, that is, materials which exclude but are not necessarily completely impervious, give some protection from liquid blister gas. The degree of protection depends on various factors such as the nature and the thickness of the non-porous film; the prevailing climatic conditions, especially temperature; the degree of contamination and the nature of the contaminant; the degree of contact between the protective covering and the material to be protected; and the susceptibility of the protected material to contamination. The resistance is approximately proportional to the thickness or weight per unit area of the film. Low temperatures, high winds or rainfall retard penetration. The initial rate of penetration does not depend on the quantity of the contaminant; once penetration has occurred the amount penetrating depends on the area contaminated. Thin oiled fabrics are very readily penetrated by Lewisite, which destroys the oil film, but rubberized materials containing fillers such as zinc oxide and antimony sulphide offer considerable resistance to Lewisite. The period of protection of non-porous material is reduced by about half if the material is in contact with materials of a fatty nature - i.e. when used for protection of stores - which tend to absorb and retain blister gas vapor; this would apply also to the material in contact with the skin. For anti-gas pathways thick bitumen lined duplex paper reinforced with hessian is

## EQUIPMENT

recommended. For covering sheets, the oil-painted type of tarpaulin appears to give the best protection; then comes a cuprammonium bitumen type, while the ordinary, so-called water-proofed canvas gives comparatively little protection. An air gap should be left between the covering and the stores to be protected. For wrapping paper, tar and bitumen-lined papers are probably the cheapest with a reasonable degree of resistance. Oil and resin-impregnated paper offer good protection from mustard gas but are somewhat stiff; glycerol impregnated paper is tougher and more elastic but less resistant. Waxed paper is highly resistant to Lewisite and mustard gas but tends to crease and thus lose its value. Transparent foils of the cellulose and cellulose ester type show good resistance to all blister gases; those based on benzyl cellulose or chlorinated rubber are readily penetrated. Metal foil is impervious but inclined to crease and form pin-holes. Ordinary cardboard boxes, wooden packing cases, sacking, etc. absorb blister gases readily, but waxed cartons resist mustard gas. Since rubber absorbs mustard gas, its use as flooring material is not recommended in buildings for ARP services. In regard to asphaltic materials, marked contamination causes softening of bitumen but such contamination is unlikely without simultaneous structural damage. Bitumen may be used instead of cement for the rapid repair of stoneware sewers and electrical conduits; a hot mixture of bitumen, pitch and sand is used in conjunction with light papier mache moulding rings to prevent the mixture running beyond the joints, and the moulds are left in place. The mixture hardens in five minutes and the pipe can be put under pressure immediately.

(Building Science Abstracts, 1939, No. 636) (DLC)

4412. Window ventilator, lamp shade, ARP switch, electric shock, glazed roofs and fluorescent lighting.

ENGLISH MECHANICS (London)

1939, October, Vol. 27, No. 1, p. 3.

Provision of adequate ventilation for modern houses; improvised dark lamp shades for blackout purposes; a blackout switch, designed to give automatic protection against light leakage; measures by which electric shocks may be avoided; methods of glazing roofs to avoid destruction; the use of fluorescent lighting for emergency purposes. (DLC)



## EVACUATION

4413. Evacuation of school children and others.THE BRITISH MEDICAL JOURNAL (London)

1940, January to June, No. 4130, p. 334.

The Ministry of Health and the Board of Education made plans to evacuate some three million persons in Wales and England; only 1,230,000 persons, however, took advantage of the offer. Half a million children were evacuated from London. The efficiency of the evacuation scheme is due to the cooperation of school teachers, school medical officers, local authorities and the public. In order to care for the health of such an influx of population to the country, provision for water supplies, sewerage, drainage, child welfare clinics, tuberculosis dispensaries, and nursing services were required. (DLC)

4414. Evacuation survey, a report to the Fabian Society.

Padley, Richard and Cole, Margaret.

1940, London, George Routledge. Pp. 296, maps.

A study of the evacuation of children in England and Wales, under the auspices of the Local Government Committee of the Fabian Society, discusses the history and problems of evacuation up to the middle of April, 1940. Contents: The national scheme, by Richard Padley; Billeting, by Margaret Cole; Local Government and Finance, by T. C. Gardener; Public Health, by E. G. Baxter; The school medical service, by Gertrude Isreals; Health visitors, by Amy Sayle; Education by Richard Padley; the Under-fives, by Gertrude Isreal; The school child, by Ritchie Calder; Higher education, by Helen Bentwich; Nutrition, by L. Haden Guest; Psychological aspects, by John Bowlby; Part LV. "Experiences of various districts" contains: London, by John Simeon Clark; Manchester, by Shena D. Simon; Dagenham, by J. G. O. Leary; North Norfolk, by Lady Sanderson; Rural Wales, by Jessie Hudson; "X": a small market town, by Fabia. Appendices: Camps, by Margaret Cole; Community centres, by Wilfred Barbage; Evacuation in France, by Paul Vaucher. (DLC)

4415. Evacuation and distribution of population.THE BRITISH MEDICAL JOURNAL (London)

1940, April 27, Vol. 1, No. 4138, p. 715.

On April 17, it was reported that evacuated areas had diminished in population by 2,250,000 persons, of whom



## EVACUATION

over 1,500,000 had been lost by London areas. In the last war most of the homes were built for emergency use; in the present war, they will be for permanent occupancy. This knowledge of population evacuation and distribution is important for adequate planning by the government. (DSG)

4416. Des Räumungsproblem im zivilen Luftschutz (The problem of evacuation in civilian air defense.)

Gebele, H.

MUNCHENER MEDIZINISCHE WOCHENSCHRIFT (Munich)

1936, February 21, Vol. 83, No. 8, pp. 332-333.

Representatives of the government and of the civilian population meet to decide on evacuation districts and plans for evacuation. The extent of withdrawal from the cities will be dependent upon the seriousness of the conflict. Provisional plans for (1) withdrawal of mothers and children; (2) voluntary and compulsory evacuation; (3) evacuation of school children with their teachers. Persons living in areas subject to heaviest attack may postpone leaving for a longer period of time. Living quarters in the evacuated areas may be en masse or for individual families. Consideration for food supplies: (1) arrangements with railroads and motor arrangements with railroads and motor trucks for transportation; (2) plans for a general cooling or refrigeration system for the most perishable foodstuffs; (3) arrangements for milk, vegetables and fish. (DSG)

## EVACUATION - ORGANIZATION AND ADMINISTRATION

4417. Classification of Scottish areas (Government evacuation scheme memorandum E. V. S. 3A)

Great Britain. Department of Health for Scotland.

1939, June, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d.5¢)

4418. General Memorandum Government Evacuation Scheme (Memorandum E.V. S 3)

Great Britain. Department of Health for Scotland.

1939, June, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 3d.10¢)

## EVACUATION - ORGANIZATION AND ADMINISTRATION

4419. Government evacuation scheme (Circular D.H.S. 23)  
Great Britain. Department of Health for Scotland.  
1940, February, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 1d. 5¢)
4420. Government evacuation scheme. Educational provision (Circular 121)  
Great Britain. Scottish Education Department.  
1939, June, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 2d. 5¢)
4421. Government evacuation scheme (England and Wales) Circular 1965.  
Great Britain. Ministry of Health.  
1940, February 15, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 1d. 5¢)
4422. Government evacuation scheme (Memorandum E.V. 5)  
Great Britain. Ministry of Health.  
1939, July, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 3d. 10¢)
4423. Report of Committee on evacuation.  
Great Britain. Parliament.  
1938, July 26, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 9d. 25¢)
4424. Review of evacuation (Government evacuation scheme Memorandum EV.8)  
Great Britain. Ministry of Health.  
1940, February, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 4d. 10¢)
4425. Review of existing evacuation arrangements (Government evacuation  
scheme Memorandum E.V.S 7)  
Great Britain. Department of Health of Scotland.  
1940, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 4d. 10¢)



## EVACUATION - OVERSEAS

4426. Evacuation of engineers' children to Canada  
THE ENGINEER (London)  
 1940, July 12, Vol. CLXX, No. 4409, p. 17:  
 The Engineering Institute of Canada has offered to receive in its members' homes children of the members of the Institute of Civil, Mechanical and Electrical Engineers. The plan is in line with the British Government's scheme for sending children overseas for the duration of the war. (DLC)
4427. Evacuation overseas.  
THE ECONOMIST (London).  
 1940, July 20, Vol. CXXXIX, NO. 5065, p. 72.  
 Lack of ships has forced the Government to postpone its plan to send children to the Dominions and the United States. It might be possible for the Government to carry out the scheme on a reduced scale, making no charge for transporting the children but disclaiming all responsibility for their safety from enemy action. (DLC)

## EVACUATION - RECEPTION AREAS - BILLETING

4428. Billeting order dated August 27, 1939 prescribing prices payable in respect of billeting accommodation (987)  
 Great Britain. Statutory Rules and Orders.  
 1939, London. H. M. Stationery Office.  
 (Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)
4429. Billeting order dated October 21, 1939 prescribing the rate at which the sum payable to the Minister of Health in respect of medical treatment of persons transferred under an evacuation plan is to be calculated (1535)  
 Great Britain. Statutory Rules and Orders.  
 1939, London, H. M. Stationery Office.  
 (Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)
4430. Billeting (Scotland) order dated June 7, 1940, prescribing the price payable in respect of accommodation furnished in any premises in accordance with a billeting notice in the case of children for whom the occupier is required to provide board and lodging (945 SL2)



## EVACUATION - RECEPTION AREAS - BILLETING

Great Britain. Statutory Rules and Orders.

1940, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)

## EVACUATION - SOCIAL PROBLEMS.

4431. Evacuating scheme and welfare work.

THE MEDICAL OFFICER (London)

1940, April 27, Vol. 63. No. 657, p. 150.

The appeal of the Minister of Health for the cooperation of welfare workers in making welfare services available to mothers and children is meeting with approval. The services provide health, ventilation, clinical facilities, meals, and dental treatment. The payment for welfare assistance, assessed and governed by financial circumstances of the evacuee, is regulated by the welfare authorities, in cooperation with the necessary authorities. (DSG)

4432. Lessons of evacuation.

THE MEDICAL OFFICER (London)

1939, November 18, Vol. 62, p. 196.

Of the many complex problems created by evacuation, the control of venereal disease is one of the most important. (DLC)

EXISTING BUILDINGS. For items on shelters in existing buildings see SHELTERS - DESIGN AND CONSTRUCTION.

## EXPECTANT MOTHERS.

4433. Emergency maternity homes.

Banks, Leslie and Norman, L. G.

PUBLIC HEALTH (London)

1941, July, Vol. LIV, No. 10, pp. 179-182.

A survey of accommodations available for the anticipated influx of expectant mothers from London and elsewhere showed that such accommodations were too few and that suitable sites had to be equipped and staffed as maternity homes in various reception areas. (DLC)

## EXPECTANT MOTHERS

4434. Evacuation of expectant mothers.THE MEDICAL OFFICER (London)

1940, January 6, Vol. 63, No. 1641, p. 7.

Women approaching the end of their pregnancy are to leave London as suitable accommodations become available in reception areas. Ante-natal attendance in reception areas is adequate. Confinements are to take place in hospitals and maternity homes. Mothers are to be billeted according to arrangements by receiving authorities after the lying in periods. (DLC)

4435. Sudden births in air raid shelters.THE MEDICAL OFFICER (London)

1940, June 22, (Vol. 63, No. 25) No. 1665, p. 217.

With the coming on of labor pains a woman is considered an urgent casualty and must be given every care and comfort. The Ministry of Health has issued specific instructions as to the treatment. A doctor or midwife should be summoned at once. Aside from seeing that she is comfortable, "the less done the better" until doctor or midwife arrives. But in case a child is born before the arrival of medical service, the instructions - which are simple - may be carried out with precision even by the inexperienced. (DSG)

FACTORIES, PROTECTION OF. See also COMMERCE AND INDUSTRY.

4436. Emergency protection of factories (Memorandum 16).Great Britain. Air Raid Precautions Department.

1940, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)

4437. Organizatsiia protivovozdushnoi oborony zavoda (Organization of ARP work of a plant)

Linnik, A.

KHIMIYA I OBORONA (Moscow)

1932, No. 8, pp. 5-6

A discussion of the fire-fighting measures of a given plant; the elimination of dangerously inflammable stock and supplies in crowded wooden structures; establishing of fire observation posts; supplementary equipment with fire alarms;



# FACTORIES, PROTECTION OF

providing for water from additional sources of supply. Medical and veterinary measures aiming to utilize the plant's first aid centers and preparation for evacuation to special gas shelters in case of air raid alarm; evacuation of casualties through the transportation means of the plants; the timely reservation of beds for casualties which may need lengthy treatment; organization of first aid courses; utilization of the plant's laboratory for the testing of contaminated sources of water and food supplies; providing the necessary medical equipment and protection of animals. Organization of local ARP brigades, chemical, fire-fighting, medical, venterinarian and policæpersonnel. The number and the strength of the brigades will depend upon the type of the plant in question. The personnel must have both theoretical and practical training and 25 per cent of the total number must always be kept in reserve. (DLC)

## 4438. Structural air raid precautions in industrial buildings.

Zilch, E. H.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1939, Vol. 9, pp. 8-12, illus.

Description and illustration of the construction of various small and medium-sized industrial buildings; detailing the application of concrete to different parts of the buildings, viz. wall structures, framework, supports, floors, beams, etc. The effects of bomb-explussions within a building, on the top story, etc.

(Building Science Abstracts, 1939, No. 873) (DLC)

## 4439. Wartime lamp production - manufacture in air raid shelter factory-windowless installation.

THE ELECTRICIAN (London)

1941, September, Vol. CXXVII, No. 3302, p. 147.

Britain's first combined air raid and shelter factory was built in September, 1940, after a fire "blitz" entirely destroyed a lamp factory. Nine days later the factory was again in production. Replacing the old building is an interconnected series of bays and offices, the whole being one gigantic surface shelter, single story erection planned for wartime use only. The factory proper and offices are entirely windowless, ventilated by air-conditioning, and every room or work bay has at least two entrances. Doors are steel and can be locked only from the outside, making it impossible for any one to be locked in. The use of wood has been cut to a bare minimum; steel furniture; steel roof girders, which were a twisted mass after the raid, have been



## FACTORIES, PROTECTION OF

re-rolled and used. All walls, even interior, are at least fourteen inches thick, and the roof consists of at least nine inches of steam cured cement, stoutly reinforced with concrete. There is a works broadcasting system by which special announcements are made to the workers. The canteen, planned as a restaurant and club-room, is equipped with a stage and microphone and is under the supervision of a well-known chef. The factory operates its own Home Guard unit as well as its own fire brigade, and has a first class hospital bay in charge of qualified nurses, always on duty. (DLC)

FACTORY LIGHTING. See BLACKOUT - LIGHTING - FACTORY LIGHTING.

FACTORY SHELTERS. See SHELTERS, INDUSTRIAL.

FARMS, See AGRICULTURE.

## FICTION AND DRAMA.

### 4440. Blackout; a one-act mystery comedy.

Raine, Margaret M.

1940, London, Samuel French, Pp. 87.

The scene of this mystery-comedy is the Dunstable Arms in Little Edgecombe-on-Sea, a village on the English coast. A story of one memorable night during a wartime blackout. (DLC)

### 4441. "Bomb shelter", a London interlude.

Orr, John W.

1941, University, Alabama, Lester Raines. Pp. 10.

The action of this play takes place in a London east side surface shelter during a night bombardment. (DLC)

### 4442. Christmas in Coventry; a pageant play complete with Christmas Eve worship service.

Cole, Franklin P.

1941, Boston, Baker's Plays. Pp. 23.

The Christmas spirit survives in bomb-wrecked Coventry. (DLC)

## FICTION AND DRAMA

4443. London front; a little picture of war conditions in one act.  
Brighouse, Harold.  
1941, London, Samuel French. Pp. 37.  
This play illustrates the casual manner in which Londoners take their bombings. (DLC)
4444. The Londoners; a narrative version of the radio play.  
Parish, James.  
1941, London, Hamish Hamilton, Pp. 64, illus.  
Fictional account of a night in London under the blitz. (DLC)
4445. Night raid.  
Lohrke, Eugene William.  
1941, New York, H. Holt & Co. Pp. 229.  
A novel. The night of a village doctor in a London suburb during a bad raid. The many characters involved, from his stern housekeeper through the gamut of the villagers, invalid ladies, and the country gentry, are alike in their calm courage and acceptance. (DLC)
4446. Shelter; a novel.  
Nicholson, Jane.  
1941, New York, Viking Press. Pp. 241. (DLC)

FIELD CAMOUFLAGE, See CAMOUFLAGE, MILITARY.

## FINANCE - GREAT BRITAIN.

4447. Air raid precautions (Approval of expenditure) provisional regulations, 1938.  
Great Britain. Air Raid Precautions Department.  
1938, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 3d. 10¢)
4448. Expenditure in respect of evacuated school children.  
Great Britain. Board of Education.  
1940, January 31, London, H. M. Stationery Office.  
Report of a Committee representing the local education authorities of England and Wales appointed to consider the problems of adjusting between authorities the expenditure

## FINANCE - GREAT BRITAIN.

incurred by them in respect of evacuated school children.  
(Chairman, D. Du. B. Davidson) (Available at British Library  
of Information, 50 Rockefeller Plaza, New York, N. Y. 3d.  
10¢)

4449. General scheme estimate. Form for statement showing the expenditure incurred, and estimated to be incurred, under the General Precautions Scheme of a council. (misc).

Great Britain. Air Raid Precautions Department.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)

FIRE BOMBS, See BOMBS, INCENDIARY.

## FIRE EXTINCTION.

4450. Emergency fire brigade measures in rural districts (misc).

Great Britain. Ministry of Home Security.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 3d. 10¢)

4451. Emergency fire brigade organization (misc).

Great Britain. Ministry of Home Security.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 6d. 15¢)

4452. Emergency water supplies for fire fighting (misc).

Great Britain. Ministry of Home Security.

1939, April, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 3d. 10¢)

4453. Enrollment of auxiliary fire service volunteers under national service campaign. (F.B. Circular 753030/15)

Great Britain. Ministry of Home Security.

1939, January 19, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)



## FIRE EXTINCTION

4454. Protection of fire brigade premises against air attack. (F.B. Cir. 59 F.B. Gen 43/1)  
Great Britain. Ministry of Home Security.  
1939, August 25, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 4d. 10¢)
4455. Sketch of emergency fire brigade organization for a hypothetical town (misc).  
Great Britain. Ministry of Home Security.  
1940, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 2d. 5¢)

FIRE PRECAUTIONS. See also STRUCTURAL PRECAUTIONS.

4456. Civilian defense; suggestions for state and local fire defense  
(Fire series, bulletin. No. 1.  
U.S. ADVISORY COMMITTEE ON FIRE DEFENSE  
1941, Washington, D. C. Office of Emergency Management.  
This bulletin gives the necessary steps in organizing a plan for fire defense, discusses the duties of Federal, State, and local agencies, and the functions of the proposed State Fire Coordinators and local defense fire chiefs, and outlines a plan for a survey of fire defenses. It also treats nautical aid, general fire protection and protection activities, and organization and training of auxiliary fire fighting forces. (DLC)
4457. Fire tests of timber buildings.  
Seger, J.  
Undated. Zurich, Buchdruckerei. Pp. 102, illus.  
An illustrated account is given of fire tests carried out at Zurich in November, 1936, by the Swiss Timber Development Association (Schweizerische Arbeitsgemeinschaft der Holz) in conjunction with the Federal testing and Research Laboratory (Eidgenossische Materialprüfungs- und Versuchsanstalt) on a 3 story building, almost entirely of fire-proof timber, consisting of 16 rooms and 8 attics. The test building was intended to represent a house with two flats on each floor divided by a fire wall. Different types of construction were used for the external walls, partitions, and floors. A detailed description of the structure is given. The roof covering materials were asbestos, cement tiles,

## FIRE PRECAUTIONS

slates, clay tiles and sheet iron. The timber, air-dried as far as possible, was treated by impregnation or painting or spraying with 17 proprietary compounds (composition not stated), which had been selected from a number of fire-proofers subjected to test at the Laboratory. The fire proofing material also included a limewash containing water glass in the proportion of 2 parts to each part of lime present; this was applied in two coats to wood-fiber wall-board. Two rooms, or four attics were tested simultaneously, two wood fires being built in each room and allowed to burn for about 20 minutes. Tests of the external walls were carried out by means of fires built close to the walls. The effects on the different types of wall, floor, etc., are described in detail and the fireproofing used in each case is stated. The materials used for impregnated wood had been exposed to the effects of weather for some time previously. In general, the proprietary materials were satisfactory. The limewash was markedly effective in preventing the spread of fire. After the conclusion of the fire test, the local fire brigade carried out a number of tests in which incendiary bombs weighing  $4\frac{1}{2}$  lbs. were dropped on the timber house. The purpose of these experiments was to demonstrate the importance of removing from attics all combustible materials that might cause the spread of fire in an air attack.  
(Building Science Abstracts, 1937, No. 1243) (DLC)

4458. If war comes to the forests.

Hunt, John Clark.

AMERICAN FORESTS (Washington, D. C.)

1941, September, Vol. 47; No. 9, pp. 407-409.

Methods are suggested for preventing forests and watershed lands from being burned by enemy attacks. Enemy planes should be prevented from acquiring air bases within feasible striking distance of our shores; interceptor planes should be stationed at interior air fields and along the coast. The essentials in forest fire control are speed, men trained in air defense to meet technical problems, and properly distributed, well trained and equipped crews to combat fires before any headway is made. Parachute smoke jumpers have also been effectively used. (DLC)

4459. The role of the fire service in national defense.

FIRE ENGINEERING (New York).

1941, August, Vol. 94, No. 8, pp. 401-405.

The International Association of Fire Chiefs in cooperation

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with the War Department and with the Advisory Committee on Fire Defense has prepared material for public instruction. Methods of presenting this material to the public are discussed in this article. This association has studied the subjects of incendiary raids and sabotage, high building protection, and various types of extinguishing agents. Preparation for an emergency is adequately planned. (DLC)

## FIRST AID

4460. First aid posts (circular 701511/55)  
Great Britain. Air Raid Precautions Department.  
1937, December 10, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)
4461. First aid posts and ambulance services. (Circular 1764)  
Great Britain. Ministry of Health  
1939, January 10, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1d. 5¢)
4462. First aid posts and points (circular 1789)  
Great Britain. Ministry of Health.  
1939, March 24, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 3d. 10¢)
4463. Memorandum for the guidance of medical officers and other personnel at first aid posts. (Emergency medical services memorandum 4)  
Great Britain. Ministry of Health.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 3d. 10¢)
4464. Le poste secours mobile étanche. (Air-tight mobile first aid stations.  
LA PRESSE MEDICALE (Paris)  
1939, Vol. 47, No. 1, pp. 1391-1393, illus.  
The role of trailer-ambulances sealed against gas; organization for medical care in passive defense, particularly for use in connection with air raids. (DLC)



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4465. The training and work of first aid parties (Handbook 10)  
Great Britain. Air Raid Precautions Department.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller  
Plaza, New York, N. Y. 6d. 15¢)

FOODS AND FOOD REGULATIONS. See also AGRICULTURE: COMMUNAL FEEDING.

4466. Air raids and food supplies.  
THE ECONOMIST (London)  
1940, September 14, Vol. CXXXIX, No. 5064, p. 350.  
Fires in London's docks caused by recent raids have not seriously affected foodstuffs because of the policy of decentralizing all food reserves. Flour, animal fodder, meat, and sugar have been the products affected; but, by avoiding large centralized stocks, damage to other foodstuffs have been negligible. Traders are urged to move their stocks from the docks as quickly as possible; other persons are urged to keep their provisions away from windows to avoid damage by glass splinters. (DLC)
4467. Britain protects food supply from gas attack.  
Trevor, John S.  
FOOD FIELD REPORTER (New York)  
1940, November 25, Vol. 8, p. 12. (DLC)
4468. Notes on the analysis of foodstuffs contaminated by poison gases.  
THE ROYAL SANITARY INSTITUTE. JOURNAL (London)  
1941, July, Vol. LXI, No. 5, pp. 165-166.  
In a discussion of contamination and decontamination of various types of foodstuffs, a list of the different kinds of food is given and suggestions are made for decontamination treatment according to the way the food is packaged. (DLC)
4469. When the bombs fall. What bombs have done to Britain's food industry. What happens in a food factory during air raids.  
Hardy, Eric.  
FOOD INDUSTRY (New York)  
1941, February, Vol. 13, pp. 33-34 (DLC)

## FOODS AND FOOD REGULATIONS

4470. Zashchita prodfurazha i vody (protection of foodstuffs, food and water).

Vodzinskiĭ B.

KHIMIYA I OBORONA (Moscow)

1938, February, No. 2, p. 19.

Warehouse stores, refrigerators, and elevators which can be closed air-tight when alarm is sounded, offer the best protection against toxic chemicals. Fodder should be well covered with oil-treated tarpaulin and screened with boards painted with oil paint. A layer of up to 10 centimeters of hay, straw, brushwork or rods should be placed between the tarpaulin and the fodder. The same rules apply to food in transit. Care should be taken to place a layer of straw or some other material on the bottom of the vehicle. After a poison gas attack or the retreat of the enemy, water reservoirs, lakes, etc. may be contaminated. Water stored in glass or well-covered metal cisterns is the safest for use.

GAS, ILLUMINATING. See PUBLIC UTILITIES.

GAS LOCKS, See STRUCTURAL PRECAUTIONS.

GAS MASKS, See GAS PRECAUTIONS.

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4471. Absorbenty i ikh primeneniye (Absorbents and their application) Kupchinskiĭ, P.

KHIMIYA I OBORONA (Moscow)

1938, May, No. 5, pp. 13-15.

The term absorbent is explained and absorbents possessing the most practical significance are mentioned: (1) activated coal, (2) the helium of silic acid (rendered harmless), and (3) activated clays and soils. Each group is described and examined, and purposes for which it is used are listed. The chief requirements for the absorbents used for gas masks are given: (1) the capacity of an absorbent must be sufficient (the maximum quantity of a poisoning substance absorbed by 13 centimeters to a full saturation) for the most poisonous substances, and especially for the chemically sturdy poisoning substances of the mustard gas type; (2) the speed of absorption of a poisoning substance must be great enough; (3) the absorbent must possess a mechanical firmness for compressing and grinding; (4) materials for making absorbents must be accessible, and simple and cheap to manufacture. (DLC)

## GAS PRECAUTIONS

4472. Atmung durch gasmaske (Breathing through gas masks)

Bruns, O.

DIE UMSCHAU (Frankfurt)

1933, September 30, Vol. 37, No. 40, pp. 773-776.

The question of gas protection for civilians as well as for the armed forces and the fire fighters has become increasingly important in the last year. A gas mask must be made to fit the entire face of the individual, so that all the air breathed in passes through the filter into the lungs. The filter should contain active carbon to absorb the poisonous gases inhaled in a fog or smoke attack. The apparatus must be equipped to operate independently of the surrounding atmosphere. This circulatory apparatus consists principally of an oxygen supply and a potash cartridge for the absorption of the exhaled carbonic acid. All of the air inhaled and exhaled must pass through the filter. There is also an unattached filter that can be used for elimination of poison gas in an atmosphere of smoke or fog. Persons who must move around or work in gas masks should move at a moderate gait whenever possible; as rapid movements tend to exhaust the protective devices of the apparatus. (DSG)

4473. Decontamination of clothing, including oil-skin anti-gas clothing and equipment from blister gas.s. (Handbook 44)

Great Britain. Air Raid Precautions Department.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York N. Y. 3d. 10¢)

4474. Decontamination of some building materials.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS. JOURNAL (London)

1939, November 21, Vol. 66, No. 12, pp. 13-16.

Staffs trained for decontamination in local areas should have some knowledge of the subject and what materials can be used to advantage. Concrete, though durable and easily cleansed by normal processes, absorbs liquid gases easily. A simple treatment is ordinary sodium silicate or water-glass (one part water-glass to four of water), first applied when the concrete is green, and applied again every four to six months. This treatment actually fills the small pores and voids at the surface, preventing penetration. Contamination of concrete by mustard gas vapor is not serious and may be overcome by opening of all doors and windows for a few hours. (DLC)



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4475. Degazatsiia gorodskogo avtotransporta (Decontamination of urban motorized transport)

Malimin.

VESTNIK PROTIVVOZDUSHNOI OBOROY (Moscow)

1937, Nos. 11-12, pp. 41-50, illus. diags.

Motorized vehicles may be contaminated while being used in a gassed area. A suitable locality for the planned decontaminating station, the organization and construction of its various departments, and its water supply, sewage system, ventilating, lighting, and heating are discussed. (DLC)

4476. Gas und Luftschutz (Gas and air raid protection)

Gebele, H.

MUNCHENER MEDIZINISCHE WOCHENSCHRIFT (Munich)

1937, September 3, Vol. 84, No. 36, pp. 1428-1429.

Poison gases are divided into three groups: (1) lung irritants, i.e. chlorine and phosgene, (2) those that produce oxygen deficiency in the blood, i.e. carbon monoxide, (3) skin irritants, i.e. potassium cyanide. Persons suffering from a gas attack should receive medical attention as soon as possible. The procedure for combating the effects of each type, and the use of pulmotor for artificial breathing are discussed. Civilian defense against gas requires thorough planning for: (a) construction of air raid shelters, (b) establishment of "first aid posts", (c) trained personnel, (d) provisions for food, (e) health and hygiene. (DSG)

4477. Gasschutz (Gas defense)

Rumpf, H.

1936, Berlin, Mittler.

Part 1 - Heavy and light apparatus for use in gas defense. In cases where there is an actual lack of oxygen so that there is no point in filtering the incoming air, an artificial atmosphere must be provided. One type of apparatus supplies oxygen under pressure from a small flask, and has an outlet valve connecting with the outer atmosphere which works only if there is excess pressure. Oxygen at 150 atmospheric pressure is released to the wearer by means of a reducing valve which supplies oxygen at the rate of 1-5-2 liters per minute. There is always a cartridge filled with caustic alkali or a similar substance to absorb the carbon dioxide and keep it low. The more elaborate of the heavy apparatus also has an artificial lung for the better regulation of breathing. As is usual,

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breathing is by mouth. The whole is carried in a haversack or similar container. Means must be provided for keeping the temperature constant. Physiological and technical specifications for the design of the apparatus equipped with an oxygen pressure flask are given. The oxygen supply is sufficient for one hour. A second type of apparatus, supplying oxygen evolved by chemical means frequently uses sodium peroxide, which serves both as an oxygen source and as an absorbent for the carbon dioxide exhaled. Another oxygen source is a mixture of potassium chlorate and manganese dioxide. The third type of heavy apparatus is the type which obtains the oxygen from fresh air. The mask is equipped with a long flexible hose which is connected to an air pump or bellows. With this type a helper is necessary to tend the air pump or bellows and feed the airline along. Methods of caring for these types and directions for disinfecting them are given. Light types of apparatus are used where the air contains enough oxygen, but also contains poisonous substances that must be filtered out. Of this type is the ordinary military gas mask provided with an inner gastight fitting which covers the nose and mouth. At the mouthpiece is screwed a canister-filled with filter layers and absorbent chemicals, - or if a large filter is necessary, the mouthpiece is connected by a flexible rubber hose to a large box like container strapped to the side. At the bottom of the canister is a fine mesh wire or a piece of metal with many holes to admit freely the air entering the filter. The first layer is usually some kind of activated charcoal, such as that from peach kernels, coconut shells, etc. then a layer of diatomaceous earth (bentonite, frankonite, etc.), and then layers of chemicals. The gastight fitting is as small as possible to prevent the accumulation of carbon dioxide inside of the mask. An exit valve permits the exhaled air to pass out to the surrounding atmosphere. All organic gases with a high vapor pressure such as aniline, benzene, hydrocarbons, and ethyl alcohol can be absorbed as can mercury. Inorganic gases are removed by chemical action; such gases are hydrogen chloride, sulfur dioxide, ammonia, hydrogen sulfide, hydrogen cyanide, halogens, and phosgene. An alkaline carbonate solution is used to remove acid gases, a difficult volatile acid or an acid salt is used to react with ammonia, while a solution of a heavy metal salt removes cyanide. Since more than one gas will probably be met with at one time it is usual to have several different absorbent layers. The agent for removing carbon monoxide is Hopcalite, a mixture of heavy oxides, containing fifty parts manganese dioxide, thirty parts copper oxide, fifteen parts cobalt oxide and five parts silver oxide.

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These oxides catalyze the oxidation of carbon monoxide to carbon dioxide. These metal oxides must be kept dry, so there is a layer of drying material included. Most of these filters are good for hours or days, some even for months and years. A table is included which gives the lethal doses, disabling doses, and doses which produce minimum symptoms for many gases. Another table gives the color and odor of many poisonous gases. Much space is devoted to the gases produced by the combustion of various substances, their effects and the tests conducted, and the application of this knowledge to fire-fighting. Means of testing gas masks are given. Part 11-Artificial respiration. The last thirty one pages are devoted to a discussion of means of artificial respiration. The use of special machines which supply an artificial atmosphere and cause the patient to inhale and exhale, such as pulmotors, is described. Manual methods are given including the manipulations to be given by one person or a squad. A sample card which gives a complete record of the patient and the treatment is included. (DLC)

4478. Gorodskie podmetal'nye mashiny dlia tsolei degazatsii (Street sweeping machines used for decontamination purposes)

Maslennikov, K. D.

KHIMIA I OBOBONA (Moscow)

1938, February, No. 2, pp. 17-18, illus., diagrs.

The decontamination of a gas-infected area should be accomplished immediately after the attack. If the toxic chemicals are in the liquid state, they can soak through the pavements, endangering lives. Special sweepers for faster decontamination through the trituration of the poisonous liquid, are recommended. This reduces the effects of toxic liquid to a minimum. The author gives a detailed description of several sweepers used in the U.S.S. R., points out their advantages and disadvantages, and describes methods for using them for decontamination purposes. (DLC)

4479. Guerra chimica e protezione antigas (Chemical warfare and anti-gas protection)

Izzo, A.

1938, Milan, Ulrico Hoepli. Pp. 614, illus.

Contents: (1) historical notes on chemical warfare. (2) the organization of chemical warfare, (3) general considerations on war chemicals in relation to their composition and action, (4) description of the principal war chemicals, (5) general media and criteria of chemical



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warfare, (6) individual protection against war chemicals, (7) collective protection against war chemicals, (8) collective protection of the civil population against gas attack from the air, (9) problems of gas warfare, (10) other media employed in gas warfare, (11) chemicals in naval warfare, (12) other uses for war chemicals, (13) notes on first aid, (14) notes on bacterial warfare, (15) the chemical arm and the measures taken in the various countries for protection against gas and air attack. Appendix: Italian legislation covering gas attack from the air. (16) Conclusions: the application of chemicals in wars of the future. (Building Science Abstracts, 1938, No. 2090) (DLC)

4480. If air war comes - a guide to air raid precautions and anti-gas treatment.

Guest, L. H.

1937, London, Eyre and Spottiswoode. Pp. 88.

Contents: (1) the attack (its rapidity; brief period for warning and preparation; types of bombs), (2) the protection of the home (protection from gas and incendiary bombs, the selections and dimensions of gas-proof roofs; direction of the prevailing wind, methods of gas-proofing rooms), (3) the respirator and the gases, (4) protection of industry and vital services (types of shelters; equipment for shelters; organization), (5) protection services, national and local, (6) doctors, first aid and hospitals, (7) decontamination of materials. Appendices contain information relating to equipment for gasproof rooms and gasproof trenches.

(Building Science Abstracts, 1938, No. 1701) (DLC)

4481. Individual' naia protivokhimicheskaiia zashchita detoi (Individual protection against gas for children)

Eroffey.

KHIMIYA I OBORONA (Moscow)

1938, July, No. 7, pp. 20-21.

Mass protection for children under 5 from gas is recommended, but sometimes individual protection may become necessary. Children are divided into 3 groups: (1) infants up to 5 years old, (2) children from 5 to 6 years old and (3) children over 6 years of age. Infants should be kept in special air tight bags or boxes provided with an apparatus for forcing in the filtered air. There are special gas

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masks for children from 1 to 6 years of age. Special care should be taken to reduce the "dead space" which existed in the adult gas masks of Kumand-Zelinskii. The physiological difference between the breathing of children and adults must be taken into consideration when constructing a gas mask for children. Children should be trained, under special doctors' supervision to wear their gas masks and to walk in them. (DLC)

4482. Instrucción sobre gaseados (Instructions for treatment of gas victims).

Galli, Eugenio A.

REVISTA DE LA SANIDAD MILITAR (Buenos Aires)

1939, September, Vol. 36, pp. 888-897.

Classified lists of gases are given for the United States, Germany, Italy, and France. The effects of some upon the human organism are given. Defense against gas is either individual or collective, usually both. Masks are of two types: those with open circuit, and those with closed circuit and oxygen supply, used only for special cases. A description follows of the Argentine mask (manufactured by the "Casa Pirelli") and of a closed mask. Shelters must be hermetically sealed and gasproof. They should have gas locks. Instructions are given for position of masks when not in use, when on the alert, and for imminent use. Directions for disinfecting masks follow. Evacuation of victims of irritating and suffocating gases to the open air is very important, since death may result otherwise. Directions for treatment are given. (DLC)

4483. Der Mensch und die Gasgefahr (Man and the danger from gas)  
Hampe, E.

1937, Berlin, Rader, Pp. 124, illus, bibl.

Contents: (1) gases: general, gases essential to life, industrial gases, and chemical war gases. (2) Gas dangers: general, accidental gas poisoning, catastrophies due to gas, chemical warfare. (3) Gas protection: general, officially organized protection, technical protective measures and apparatus. (4) Gas protection during air attack: general, filters and gas masks for individuals and gasproof rooms for communal use, precautionary measures against gas. Conclusion. (5) Tabulated analytical data. (Building Science Abstracts, 1937, No. 2591). (DLC)

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4484. The penetration of mustard gas into building materials.

Themme, F.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1936, Vol. 6, pp. 189-190.

An account is given of an investigation of the spread, penetration, and volatilization of mustard gas on various building materials. On a talc-surfaced, asphalt-bitumen roofing felt, the drops of gas spread slightly and after  $1\frac{1}{2}$  days the wetted surface has completely dried. On a similar paper, surfaced with fine sand, spread was rather more rapid and the wetted surface very rapidly became dry, while on another similar paper with a surface treated with mineral pigments, the drops did not spread and remained on the surface for 5 days. In these cases no attempt was made to determine the amount lost by the drops by volatilization or penetration, but it was noted that with all these materials there was no complete penetration. Tar-impregnated papers behave in much the same way. It is concluded that such materials are particularly resistant to penetration by the gas. With porous building materials, absorption of the gas was marked, the degree and speed being dependent, of course, upon their inherent porosity. Penetration ranged from 2mm. to 8mm. for bricks, sandstone, and various mortars and concretes. On glazed bricks there was no penetration; roofing slate rapidly absorbed the gas. Oil paint coatings, if free from cracks, were satisfactorily resistant, but old, deteriorated coatings offered little resistance to penetration. On polished linoleum the drops persisted for several hours and penetration was very slow. With cork linoleum, on the contrary, spread and penetration were rapid. Study was also made of the behavior of the gas when similarly applied to various road surfacing materials.

(Building Science Abstracts, 1936, No. 1701) (DEC)

4485. Podgotovka degazatsionnykh veshchestv k degazatsii (Preparing chemicals for decontamination)

Maslennikov, K.

KHIMIYA I OBORONA (Moscow)

1938, April, No. 4, pp. 4-6, illus.

Description of equipment necessary to prepare chemicals for decontamination purposes, and problems of storing such chemicals. Most commonly used chemicals are calcium hypochlorite and chloride of lime. These chemicals should not be exposed for long time to open air because they



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deteriorate; moisture is also harmful to them, causing lumping. The chemicals used for decontamination are in the form of powder and liquid. Special movable mixers for these chemicals are described. (DLC)

4486. Poison gas - a new form of defense.

Evans, W. E.

PAINT, VARNISH, LACQUER, ENAMEL AND COLOUR MANUFACTURE (London) 1938, Vol. 8, pp. 153-168.

A patented sealing material with protective properties for use in gas proofing rooms contains, as sealing element, rubber chloride, which is plastic, adhesive, easily moulded, strips cleanly from a surface and is very resistant to penetration by gases. Other constituents are fat or oil, powdered asbestos, the latter to act as gas-absorbent, and powdered aluminum to act as catalyst in the reaction between the gas and the anti-gas constituents. The latter are in alkali, such as sodium carbonate, urotropine, and chloramine-T: the reaction of these constituents, respectively, with chlorine, phosgene, and mustard gas and their protective effect are briefly described.

(Building Science Abstracts, 1938, No. 1700) (DLC)

4487. Poison gas and the builder.

Foster, Thomas

THE ILLUSTRATED CARPENTER AND BUILDER (London)

1941, August 8, Vol. CXXIX, No. 3338, pp. 142-143.

An attempt to allay civilian fears of poison gas through a description of the methods of combating it. Gases are classified according to their behavior: (1) persistent gases - not true gases, but liquids that slowly vaporize at normal temperatures, (2) non-persistent gases - these are true gases; the liquid turns into gas within a few seconds after the bomb bursts, (3) particulate vapors or smokes - finely divided particles usually with an arsenic content which produce symptoms of sneezing and vomiting. The writer recommends certain official publications and ARP handbooks, gives instructions on the use of gas mask and outlines methods of detection of gases through association of their smell with familiar odors. (DLC)

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4488. The protection of the public from aerial attack.

The Cambridge Scientists' Anti-War Group.

1937, London, V. Gollancz. Pp. 127.

This book is a critical examination of the recommendation put forward by the Air Raid Precautions Department of the Home Office. Contents: Part 1 - preface.

Introduction. Gas-proof rooms. Gas masks. Protection of children. Incendiary bombs. Summary. Discussion. Part II - experiments using carbon dioxide. Series of experiments using amyl acetate. Experiments with a blower in "gas proof" room. The concentration of gas likely to be obtained in air attacks. Calculation of the survival time in a "gas-proofed" room. Experiments with a gas mask. Experiments with thermite.

(Building Science Abstracts, 1937, No. 1079) (DLC)

4489. Scientists and gas-filled rooms.

Hill, J. K.

THE CHEMICAL AGE (London)

1937, Vol. 36, p. 232.

Living rooms can be reasonably safe in gas raids by closely covering all air inlets, such as doors and windows, with loosely woven textile fabrics, such as blankets or cotton sheeting, moistened with a 20 to 25 per cent solution of equal parts of sodium carbonate and sodium acetate. When protected in this way, doors and windows should be left open to allow the entrance of filtered air and to prevent the atmosphere within from becoming vitiated by the breathing of the occupants.

(Building Science Abstracts, 1937, No. 1080) (DLC)

4490. War gases, the detection and identification of. Notes for the use of gas identification officers. 1st edition (misc).

Great Britain. Air Raid Precautions Department.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza. New York, N. Y. 1s. 30¢)

4491. Wehrchemie; als Dezimalklassifikation des Feuer-Explosions - Nebel -, Rauch -, Giftkampf- momente. (Chemical warfare; a decimal classification of fire-, explosion, fog-, smoke-, and poison-fighting data)

Langhans, Alfred.

1937, Berlin, "Offene Worte". Pp. 475.

The steady increase in the literature on chemical warfare

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renders imperative some systematic arrangement of the data. The most expedient system is the decimal classification, which has already been applied to many other fields of knowledge. The author of this volume has subdivided the field as a whole into "sections", "chapters", "divisions", and "numbers". Through this system chemical warfare data can easily be arranged into a logical and complete unit as opposed to an arbitrary alphabetical arrangement. There is an alphabetical index of 10,000 items. (DLC)

## GLASS, PROTECTION OF

4492. Checking danger of blast flung glass.

BUSINESS (London)

1941, January, Vol. LXXI, No. 1, p. 74, illus.

"Short of the removal of glass... or protection by arrow plate, nothing can save glass from being broken, if it is within the blast area. The problem is... to prevent glass fragments from being converted into highly dangerous missiles." A series of tests to determine the best adhesive material showed that (1) material adhering firmly to the glass safeguarded against personal injury due to broken glass, (2) anti-shatter cloth can be made more effective if treated with an additional coating of adhesive, and (3) for maximum safety, both netting and cloth should overlap the edge of the glass and be fixed firmly to framing by a full  $\frac{1}{2}$  inch or more. (DLC)

4493. Protection of windows in commercial and industrial buildings  
(memorandum 12)

Great Britain. Air Raid Precautions Department.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 4d. 10¢)

4494. Wood shutters as protection.

Hill, G. Noel.

THE ILLUSTRATED CARPENTER AND BUILDER (London)

1940, October 11, Vol. 127, No. 3295, p. 420.

Wood shutters are of no value as protection from broken glass or flying splinters. They are a false and imperfect source of security. The writer suggests half-inch mesh wire netting and wallboard shutters, provided they are



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affixed with rubber hangers so that they will not be unhinged by blast. (DLC)

HALDANE SHELTERS, See SHELTERS, CONCRETE

HEALTH AND HYGIENE. See also MEDICAL AND NURSING SERVICES; SHELTERS -- HYGIENE CONDITIONS

4495. British health after nearly a year of war.  
NEW YORK STATE JOURNAL OF MEDICINE (New York)  
 1940, November 1, Vol. 40, No. 21, p. 1566.

Lord Horder reports that after nearly a year of war, the physical health of the nation is at an unusually high level. Cerebrospinal fever has subsided, thanks to chemotherapy; tuberculosis has showed no material increase; venereal disease has been kept in bounds; scarlet fever and diphtheria fell to two-thirds of that in 1938. (DSG)

4496. Health education in the shelters.  
THE BRITISH MEDICAL JOURNAL (London)  
 1941, September 20, Vol. 2, No. 4211, p. 411.

Air raid shelters afford an opportunity for education in the health and care of children, in dieting and decent living, and in mothercraft. Nightly habits of the people have been changed due to heavy bombing. Local authorities have provided sanitary and washing facilities, canteens and medical aid posts. Large public shelters are more popular than small communal and Anderson shelters, because people have a greater feeling of safety when grouped together. Commendation is given to volunteer shelter workers. (DSG)

4497. Health in wartime.  
THE MEDICAL OFFICER (London)  
 1941, April, Vol. LXV, p. 113.

District medical officers have answered questionnaires on the health of the people as affected by war conditions and rationing. Rationing of patients suffering from tuberculosis did not affect their progress adversely. Transient nervousness was observed in some children who suffered from juvenile rheumatic disease. In the poor

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class hospitals, patients between the ages of 16 to 60 showed a marked decrease in hysteria, neurosis, and neurasthenia, and this is attributed to the availability of work. The most surprising thing is the little effect was had on the nerves, and there is little or no "shell shock". (DSG)

4498. National anti-rat campaign.

THE MUNICIPAL JOURNAL (London)

1940, November 15, Vol. 49, No. 2494, p. 1456.

The destruction of foodstuff, poultry, buildings, and warehouse goods and the carrying of disease germs, fleas, and lice have led to active and effective war against rats in the hope of conserving the food stock and of minimizing the danger of epidemic diseases created by air raid shelter life. (DLC)

HIGHWAYS, See PUBLIC ROADS AND BRIDGES.

## HOSPITALS.

4499. Emergency hospital organization. First aid posts and ambulances.

Statement (Cmd. 5061)

Great Britain, Parliament,

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 4d.10¢)

4500. Importance of general equipment and personnel in a hospital safety program.

Buck, George H.

HOSPITALS (Chicago)

1941, November, Vol. 15, No. 11, pp. 45-48.

A discussion of the protection of patients from injury by various types of hospital accidents: fire hazards; electric shocks; falls from beds; burns from hot-water bottles and protection against aerial bombardment, another type of safety precaution which confronts the hospital today. (DLC)

## HOSPITALS.

4501. Krankenhausbetrieb und Fliegerangriffe (Hospital management and air raid attacks)

Reimers, C.

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT (Munich)

1938, September 23, Vol. 85, No. 38, pp. 11476-11479.

The intense bombing of hospitals during the Chinese-Japanese War in 1938, carried out principally for its demoralizing, psychological effects, showed the need for hospital anti-aircraft protection. Experience indicates that an alarm system within the building is necessary. Results of experiments with different types of alarm systems are discussed. The construction of bombproof rooms for: (a) performing emergency operation; (b) patients and personnel. Problems involved in arranging surgical equipment for the safety rooms. Measures taken for sterilization of equipment, and provision for additional water supply. Lighting during the blackout can be provided by candles, petroleum, and gas. For the operation of X-ray machines and other necessary electrical equipment, a small benzene driven motor can be used. Suggested measures for movement of non-convalescent patients are given. Problems of beds and bed space for these patients. Organization and discipline of the hospital personnel during an air attack. (DSG)

4502. Regulations for structural air defense in hospitals.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1939, Vol. 9, p. 14-

In built up areas hospitals will be exposed to the effects of bombs in air raids. The Red Cross or any other distinguishing mark cannot be seen from great heights or in bad visibility. At night illuminated signs would be forbidden by the general darkening regulations. It is therefore necessary to take structural precautions for protecting from air attack hospitals, military hospitals, sanatoria, and nursing homes: this applies to new buildings, rebuilding, and extensions. The object of structural air defense is to reduce the destructive effect of air raids and to ensure that the necessary services can be carried on during the raid and the complete work of the hospital resumed as soon as possible afterwards. The following regulations must be observed: built up areas and the inner quarters of towns are classed as undesirable. Desirable sites may be found in country or forested districts not reserved for residential or industrial



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purposes. Hospitals and sanatoria should contain not more than 600 beds and military hospitals not more than 450. Several smaller institutions are preferable to one large one. The buildings should be staggered and should be as small and as far apart as the site allows. Many storied buildings are not permitted: two, three, or at the most four stories may be allowed. Buildings should conform to the configuration of the country. The plan of the buildings should be long and narrow and inner courts are not allowed. Air raid shelters should be provided inside the buildings. If possible, patients confined to bed and their attendants should be provided with shelters in the basement or alternatively on the ground floor. It is possible to strengthen staircases so as to form shelters for convalescents and staff. Hospitals must be constructed to resist the effects of bombs (especially blast, suction and splinters) and forces from all directions acting on the supporting structure. These conditions are best met by framed structure. The framework should not collapse even when individual members are destroyed. The joints and corner fastenings of the framed structures must be made specially resistant to bending. In buildings of more than one story the walls must be made rigid by means of the floors which must be built as stiffening floors. One story buildings also must be made rigid by the connection of floors and bearing walls. In masonry buildings the compressive and tensile strengths of the masonry must be increased by means of mortar of special quality (hydraulic lime or slow setting cement mortar.) Precautions must be taken in each building to prevent the spread of fires from incendiary bombs. As far as possible all parts of the building, especially the roof structure, should be made of non-inflammable materials, the load bearing capacity of which is not affected by heat. As a protection against rapidly burning fire, hard roof coverings must be used, with the exception of such as give a connected surface, (e.g. steel pantile roofs, wood-cement roofs) which make breaking through the roof for fire fighting purposes difficult. In general, a tile roof on battens is recommended, as it can easily be demolished in case of fire. The floor of the story below the roof, in all three or more storied buildings, must be of reinforced concrete 8 cm. thick (hollow block floor must have a concrete slab at least 5 cm. thick), or an equivalent solid floor. The water supply for fire fighting purposes must be connected with two different water mains belonging to the public water supply; on the site there must be an additional independent source. Boilers and machinery should be kept in special buildings,

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as far as possible from other buildings. They should be divided into groups, in order that the destruction of one group will not entail a complete stoppage. High pressure cables must be capable of being switched off at once. The water, gas, and electricity supply should be connected with several sources. Electric wires should be fitted where they can be easily inspected. They should not be placed on outer walls. Wires and switches should be painted to make them conspicuous; concealed wire and switches should be indicated by notices. Wires running through walls should be protected by means of a fiber packing. Darkening precautions should not hinder the usual work of the institution. The natural features of the district should be used to give protection to the buildings from the air. Trees and bushes should be removed only when absolutely necessary for building purposes, and should be planted up to the building to make the plan of the buildings unrecognizable and to eliminate shadows. Both for camouflage and for purposes of protection against fire, tree plantings should consist of a normal mixture of broad-leaved and coniferous trees. The color of the buildings should be the same as the predominant color of the surroundings. Roofs should be of dark shades, not of red tiles.

(Building Science Abstracts, 1939, No. 764) (DLC)

4503. Structural methods for air raid protection in hospitals.  
Lofken.

ZEITSCHRIFT für das gesamte KRANKENHAUSWESEN (Berlin)  
1938, Vol. 18, pp. 1-10.

Hospitals cannot be satisfactorily protected against air raids in populous centers; a site in the open country or on the outskirts of towns is preferable. Several buildings far apart are preferable to a single large building and the number of beds should not exceed 600, or 450 in military hospitals. The plan should be long and narrow and the various groups of buildings should be connected by means of underground passages through which also the service cables, pipes, etc. pass. Buildings should not exceed 4 stories in height and should conform to the official regulations for safety of buildings against explosive and incendiary bombs. Inside corridors are useful: they are easily reached and the walls afford protection. Hydraulic lime or extended cement mortar should be used in the construction of brick buildings. The spread of fire is guarded against by the distance between buildings; also



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precautions should be observed in individual buildings and the top story should be made fireproof. Partition walls and the sides of lifts and staircases should be fireproofed to prevent fire or smoke in rooms below and the top floor strengthened to resist incendiary bombs and falling timbers, etc. Buildings should be inconspicuous and roofs should be tiled, not of solid surface of steel or concrete. The surfacing of paths and roadways should be dark in color and they should be at a sufficient distance from buildings to avoid obstruction from falling debris. Auxiliary means of gas, water and electricity supply should be provided. Switch boards should be located in the basement and call-boxes made gasproof. Boilers and machinery should be constructed in units in isolated buildings so that if one unit is destroyed its work can be carried on. High pressure cables should be provided with breaker switches or change-over switches. Air raid shelters sufficient to contain the staff and patients should be provided, preferably in the basement, but permissibly on the ground floor. (Building Science Abstracts, 1939, No. 343) (DLC)

4504. An underground emergency hospital for air raid casualties.  
THE LANCET (London)

1941, October 25, Vol. CCXLI, No. 6165, pp. 494-496.

The commandant of a local hospital in London has arranged - if the present building should become unusable because of air raids, explosion, or delayed action bombs - to take over the basement of a large store nearby, and has equipped the premises so that his staff and casualties could be transferred in a short time. It was decided that a reserve accommodation underground would be safer than one built to let in light and not keep out bomb splinters, and would be immune from noise and breaking windows. This building - constructed of steel and concrete - is equipped with several lavatories and elevators, both freight and passenger, and wide staircases. Space was set aside for the operating theater, an X-ray room, and the installation of sterilizing equipment. The kitchen was made available for feeding the patients. Access to the basement was by a covered driveway used for loading purposes and well adapted for use by ambulances. The total cost of alterations, including plumbing, painting, and wiring was less than \$5,000, which was paid from a fund the Lord Mayor has collected. This underground hospital now has a floor space of 2887 sq. ft. and can, if necessary, be extended to 8000 ft. The operating theatre measures 620 ft. and affords space for four tables. It is ventilated by forced draught through fine gauze screens.



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To test its efficiency several operations were performed and no cases of sepsis occurred. Sterilizing is done by electrical heating; if the current fails gas boilers and oil stoves may be used. The basement, during a "blitz", has a great appearance of safety - patients admitted to it recovered more rapidly from shock than did those sent to outside hospitals. Arrangements are being made to use, as an overflow accommodation, the cellar of a brewery nearby which is 30 ft. underground.

## HOUSING

- 4505, English housing project planned with air raid precautions.  
AMERICAN CITY (New York)  
 1941, March, Vol. 3, p. 58.

Housing in England now has for its main requirements:

(1) segregation of industrial and residential zones by belts of open land, (2) family units in blocks of flats to be surrounded by wide open spaces to avoid obstruction of roads or footpaths through possible collapse and resulting debris, (3) group planting of trees to act as screens from air observation. (DLC)

4506. Der kommende Siedlungsbau (Construction of future settlement houses)  
 Gebhardt, W.  
TECHNISCHES GEMEINDEBLATT (Berlin)  
 1936, December 10, Vol. 39, No. 12, pp. 281-284.

A plan has been formulated according to the national socialistic method for building new settlement homes. One of its important features is provision for aerial protective measures. These settlements, to be situated out from the city and industrial centers, will provide individual homes for thousands. Protective measures against possible air attacks will be: (a) subterranean concrete dugouts with iron entrance doors; (b) steel and concrete shelters; (c) steel cells built to accommodate two or three persons who must remain outside to man important posts. (DSG)

HYGIENE. See HEALTH AND HYGIENE.

ILLUMINATING GAS. See PUBLIC UTILITIES.

INCENDIARY BOMBS. See BOMBS, INCENDIARY.

INCUNABULA, See LIBRARIES.

INDOOR SHELTERS. See SHELTERS - DESIGN AND CONSTRUCTION.

INDUSTRIAL SHELTERS. See SHELTERS, INDUSTRIAL.

LANTERN SLIDES.

4507. Officially approved lantern slides, showing air raid damage in foreign countries, prepared for municipal and other local authorities for training purposes in Britain. They are not, apparently, available to the general public.

The slides are:

No. of Slides	Office of Works Serial Numbers	Title
6	A 1567 - 1572	Shanghai Bombing
12	A 1650 - 1661	Spain Bombing
10	A 1667 - 1668)	
	A 1679 - 1683)	Finland Bombing
	A 1708 - 1710)	
	A 1711 - 1719	Poland Bombing

France and Great Britain in preparation.

The prices of the slides will be 6d. each (including packing and postage except on orders of less than 12 slides, when 6d. will be charged for packing and postage) and they may be ordered singly or in sets. Orders should be sent to the Headquarters Training Section of the Ministry of Home Security at Horseferry House, Thorney Street, London S.W.1. Orders should quote serial numbers and titles, both of which will appear on the slides.

LAUNDRIES.

4508. Mobile laundries.

JUSTICE OF THE PEACE (London)

1941, August, Vol. 105, No. 32, pp. 433-4.

Persons made homeless by an air raid may have their

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salvaged clothes washed by mobile laundries which tour bombed areas. The laundry is electrically operated, staffed by women, and driven by men capable of taking care of machinery; clothes are washed and returned within two hours. (DLC)

LAWS AND REGULATIONS. See also BLACKOUT - REGULATIONS.

4509. Air raid precautions act, 1937.  
Great Britain. Parliament.  
1937, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 3d.10¢)
4510. Civil defense act, 1939.  
Great Britain. Parliament.  
1939, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 2s.60¢)
- 4511 Compensation (defense) Act, 1939.  
Great Britain. Parliament.  
1939, London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 4d.10¢)
4512. Deutsches Reich, erste, zweite dritte und vierte Durchführungs Verordnung zum Luftschutzgesetz (The German Reich, first, second, third and fourth regulations for air raid defense regulations)  
REICHS - GESUNDHEITSBLATT (Berlin)  
1938, March 16, Vol. 13, No. 11, pp. 193-194.  
A summary of the first four air raid defense regulations. First order. Part 1. Consideration of problems involved in arrangement for allowances and compensation for air attacks. Part 11. Plans for payment of personal services and necessary improvement, training, evacuation, and damages done to property. Second order: Building protective measures for both old and new buildings. Provisions for expanding buildings. Regulations for evacuation of these orders. Third order: Further plans for protection of buildings against air raids with special emphasis on



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protection against fires. Fourth order: Recruiting of personnel.

4513. Das französische Luftschutzgesetz (The French air raid regulations)

TECHNISCHES GEMEINDEBLATT (Berlin)

1935, May, Vol. 38, No. 5, p. 123.

The Minister of the Interior has authorized a commission to formulate a set of defense regulations against air attacks. The plan provides for (1) special protective measures against air attack, to be taken in construction of new buildings, (2) organization of first aid corps to take care of the injured, (3) cooperation of public and private enterprises, (4) plans for construction of public shelters for protection against bomb and gas attacks, (5) plans for evacuation districts, (6) blackout regulations, (7) fire brigade service, (8) provisions for penalties to be imposed upon those who refuse to cooperate with the state department. (DSG)

## LIBRARIES

4514. Air raid precautions for the library.

Wright, W. F.

THE LIBRARY ASSOCIATION RECORD (London)

1938, October, Vol. 40, No. 10, pp. 510-512. (DLC)

4515. La construction des dépôts d'archives et la défense passive. (The construction of archival depositories and passive defense)

Rabut, J.

ARCHIVES ET BIBLIOTHEQUES (Paris)

1939, Vol. 4, No. 2, pp. 89-97.

Construction of library buildings and archival depositories determine the passive defense of archives and libraries against air raid attacks. Since damage by bombs is the most destructive and dangerous in the case of libraries and archives, these latter should be placed in high buildings with a narrow fundament, so as to offer the smallest possible surface toward the sky. The passive defense of libraries, as well as of archives depends on the timely and safe removal of books, documents, and valuable manuscripts into depositories whose walls and ceilings are strong enough to withstand bomb splinters and air pressure. Their doors and other outlets must be air and water-tight. The removal of valuable books, documents, and manuscripts

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must be prearranged and fully organized in time of peace, and should be effected by means of adequately protected trucks and vans. The depositories to which those valuable archival and library materials may be removed should be provided with ventilation and must be entirely free of dampness. (DLC)

4516. London's first mobile library.

Sinclair, Frederick.

THE LIBRARY ASSOCIATION RECORD (London)

1941; May, Vol. 43, No. 5, pp. 86-88.

A travelling library, intended solely as a wartime measure, has been put into operation by the St. Pancras Borough Council. This provides a lending library service for all persons who, for various reasons, may be debarred from using the Council's library buildings. It is also intended to serve the needs of civil defense workers (including ARP personnel, and the A.F.S. services), balloon barrage units, the Home Guard, etc. Construction, dimensions, equipment, type of lighting, and routine are explained. Many books have been provided for public air raid shelters, rest centres, and evacuation camps. (DLC)

4517. Luftschutz in Bibliotheken (Air protection in libraries)

Zlammer, Franz.

ZENTRALBLATT für BIBLIOTHEKSWESSEN (Leipzig)

1935, September - October, Vol. 52, Nos. 9-10, pp. 496-505

Total war and ruthless bombing of civilian populations will endanger libraries, not so much by explosive or chemical bombs as by incendiaries. No sure means of protection are known - as water increases the peril. The best protection is sand, but there are provisions for dispersing even sand. The rule is, let the chemicals burn out; then extinguish by water or ordinary means. But water damages books. Thirty planes can carry 100,000 such bombs, which can penetrate ordinary roofs. Changed building methods are needed: smaller and more extended buildings, lower in height; resistant roofs; more glass and less masonry walls; underground, noninflammable store rooms. Glass should be orange-colored to protect books from red rays. Libraries with timber floors and stacks should be noninflammable, floors with lime covering, and all wood steeped in a preventive mixture. Stacks should be built from the ground up. Preparation should be made beforehand for removal of books, catalogues and loan records to places of safety, everyone should be drilled in his task,

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and all plans should be executed within a half hour or an hour of warning. Discusses relative values, MSS, incunabula, specimens of binding, prints, etc. Each library must consider its own specialities. Safety chambers should be accessible. (DLC)

4518. Report on the precautionary measures regarding its collection adopted by the Library of Congress.

Orne, Jerrold.

1941, Washington, D. C., Library of Congress. Pp. 25, table.

"The plan of operation involved the selection from the total of three distinct classes of material. The first comprises the most valuable materials in the custody of the Library of Congress: the records of the origin and development of American democracy,...the Constitution of the United States, the Declaration of Independence, the papers of the Continental Congress, the Articles of Confederation, and the papers of the Presidents. The second includes a great mass of books and pamphlets of an importance second only to those invaluable materials. Books, etc. of the second category are to be given the greatest possible protection after the claims of the first group have been adequately satisfied. Included here are the irreplaceable, the rare, and the costly items chosen from the general collections of the library as well as from its several subject subdivisions. The third unit includes books, pamphlets and other working materials which would be necessary to the maintenance of a constant and adequate library service to Congress and other branches of the Federal government during an emergency...Such materials would necessarily remain within the library's walls, but would be assigned to locations of the greatest safety." The procedures of selection for each of the library divisions are described-also the methods of marking and segregating the materials chosen. Methods of photostating cards used in the listing of certain materials are outlined, and packing-case requirements estimated. (DLC)

LIGHT LOCKS. See BLACKOUT - LIGHTING.

LIGHTING CAMOUFLAGE. See BLACKOUT.

LUMINOUS PAINTS. See PAINT



MAIL, See POSTAL SERVICE

MANUSCRIPTS, See DOCUMENTS, PROTECTION OF

MAPS

4519. ARP maps.  
INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS. JOURNAL (London)  
 1939, January 3, No. 15,

ARP schemes in built-up areas will require the use of maps. Ordnance maps of the urban areas have not been revised for some years. A survey will be made to carry out a special revision of all sheets required for ARP purposes. These sheets are to be known as a special emergency edition and will be available for ARP work only. (DLC)

4520. Maps for use in connection with air raid precautions schemes.  
(Air Raid Precautions Department Circular 703214/9)  
 Great Britain. Ministry of Home Office and Home Security.  
 1938, November 30, London, H. M. Stationery Office.  
 (Available at British Library of Information, 50 Rockefeller  
 Plaza, New York, N. Y. 2d. 5¢)

MEDICAL AND NURSING SERVICE. See also FIRST AID: HOSPITALS.

4521. Administration of ARP casualty service.  
THE BRITISH MEDICAL JOURNAL (London)  
 1940, January 6, No. 4122, p. 108.

In the opinion of the author, doctors should wait for cases to reach them rather than move to them, as there would not be enough doctors to go to the scenes of damage in widespread air raids. If the doctors are well trained, with at least an elementary knowledge of ARP organization, many lives will be saved in a major offensive. (DLC)

4522. Air raids and fractures.

Hyde, Robert R.

THE SPECTATOR (London)

1940, January 5, Vol. 164, No. 5819, p. 37.

The Council of the British Medical Association appointed a committee "to consider the existing arrangements for the

## MEDICAL AND NURSING SERVICE.

treatment of fractures and other associated injuries of the limbs". Modern fracture clinics are being built and equipped in several industrial centers. Persons injured during air raids should be taken directly to hospitals, with no delay at first aid posts. (DLC)

4523. A procedure for the treatment of gas casualties.

Thompson, R. H.

THE BRITISH MEDICAL JOURNAL (London)

1941, September 27, Vol. 11, No. 4212, pp. 448-451 (DSG)

4524. ARP dressing stations.

THE MEDICAL OFFICER (London)

1939, March 25, Vol. 61, p. 117.

It is estimated that one ton of bombs causes about 75 casualties; thus a bombardment of 540 tons would bring about 50,000 casualties. As all casualties happen practically at the same time or within seconds or minutes of each other, the post squads must be prepared to handle this cast army of casualties promptly, and as efficiently as possible. This requires much preparation and training. (DLC)

4525. ARP post for school health services.

THE MEDICAL OFFICER (London)

1940, January 20, Vol. 63, No. 1643, p. 22.

Circular 1950 (January 8, 1940) issued by the Minister of Health to the Board of Education urges the cleansing of school children in evacuation areas and the cooperation of first aid personnel in cleansing posts in evacuated areas. The medical officer is to review all first aid posts, and to take steps for the resumption of all normal work. (DSG)

4526. Der Arzt im Luftschutz (The physician in air raid protection)

Veppermann,

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT (Leipzig)

1937, July 23, Vol. 63, No. 2, pp. 1163-1164.

Civilian air defense is divided roughly into: (a) air raid warning service, (b) auxiliary service, (c) industrial protection, (d) building protection, (e) individual protection. In connection with these the medical service is most necessary. This service is to be organized accord-

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ing to the provisions of the Aerial Defense Laws of 1937. In case of serious raids the doctor's problems would involve the establishment of medical service in first aid stations and in air raid shelters, the arrangements for equipment and supplies, and the organization of auxiliary medical and nursing personnel. It is expected that this service will be augmented by the German Red Cross. The Reich Institution in Berlin will give doctors special instruction and the German Red Cross in Oranienburg will give a course in the treatment of gas victims, including gas-pathology and gas-therapeutics. (DSG)

4527. Arzt und Krieg in England (The physician and the war in England)  
DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT (Leipzig)  
 1940, January 5, Vol. 66, No. 1, pp. 18-19.

A medical staff must be organized for treatment of those wounded in air raids. Some protective measures for the civilian population include evacuation, food supply, shelters, and protection against poison gas. Mr. Elliott, the Health Minister, declares that the doctor's problem involves: (1) protective measures for the hospital, (2) selection of medical and nursing personnel, (3) securing sufficient number of beds, (4) mobilization of medical staff for the first aid stations, (5) provisions for hot and cold water in the shelter areas, and (6) equipment. The Medical Society has made plans for the care and treatment of those suffering from war neuroses, and for the care of the blind. (DSG)

4528. Blood, plasma, rubber armor, anti-shock weapons in raids.  
SCIENCE NEWS LETTER (Washington, D. C.)  
 1941, June 7, Vol. 39, No. 23, p. 366.

In a report to the American Heart Association, Dr. Alfred Blalock of Vanderbilt University, advocates the use of rubber armor, as well as the transfusion of blood or blood plasma for treating shock due to bomb explosions. The idea of rubber armor comes from experiments in Britain, where it has been noted that the pressure of blast from high explosives **bruises** the lung by impact on the body wall. This can be ameliorated by the use of some material capable of absorbing the pressure wave, and rubber in thick layers was selected, after experiments. Dr. Blalock further states that a recent discovery proves that brain concussion results, not from a blow on the head, but from sudden acceleration resulting from a blow, and if the head is kept from moving when the blow is struck, the phenomenon fails to occur; and



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that loss of blood from traumatic shock can be corrected within twenty-four hours by intravenous injections of whole blood, plasma, or serum. (DSG)

4529. Burns in wartime.

Oldfield, Michael C.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS (London)

1941, July, Vol. 77, No. 1, pp. 1-13.

Civilians from bombed areas around London and soldiers evacuated from Dunkirk and Narvik have suffered burns from incendiary and explosive bombs; even a high percentage of sailors wounded in action as well as pilots from crippled air craft have been burnt about the face, hands, and legs. Many, suffering from tragic "psychological collapse" due to intense pain, become nervous wrecks and chronic alcoholics. Burns have been divided into three classes: 1st degree-scorching of the skin and erythema; 2nd degree-partial skin destruction; 3rd degree-destruction of at least the full thickness of the skin, often deeper. Major burns should not be treated at first aid stations, other than covering the exposed burnt areas with clean cloth. The patient should be sent to a hospital and while waiting transference should be kept warm. An X-ray examination should be made to discover "blast-lung", which often accompanies severe burns, as this complication is often obscured by other symptoms. (DSG)

4530. Chirurgische Nothilfe und passiver Luftschutz (Surgical first aid and passive air defense)

Kreuter.

MUNCHENER MEDIZINISCHE WOCHENSCHRIFT (Munich)

1937, July 2, Vol. 84, No. 27, pp. 1049-1052.

If aerial warfare should come to the populace, a knowledge of the best methods for treating bomb injuries will be imperative. Dr. Kreuter points out the various measures for treating injuries of this nature from medical experience gained in the last war and from up-to-date medical procedure. He believes that the most difficult and widely spread wounds of civilians will be those produced by splinter bombs. The big problem here lies in the technique of probing for splinter fragments and resulting dangers of infection. Relief from pain will be had through various local and general anesthetics. Techniques of administration are discussed in full. The ability to stop profuse bleeding presents another great problem. In

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many cases this is done by tourniquets and compresses. When internal bleeding occurs the problem is further complicated and the results far less satisfactory. Whenever possible, all wounds should be treated within six hours after they are received. Prophylactic serums and their use to avoid tetanus are discussed. (DSG)

4531. Emergency medical service for civilian defense (Medical division bulletin No. 1)

U. S. OFFICE OF CIVILIAN DEFENSE.

1941, Washington, D.C. Pp. 9, map, chart.

This bulletin is the first of a series of recommendations to state and local directors of Civilian Defense concerning the augmentation of medical facilities in their area. It presents a simple basic plan for the organization of Emergency Medical Field Units related to hospitals, which can be adapted to the needs of any community. It directs attention to the possible future requirements for expansion of hospital facilities both within a community and outside its boundaries. (DLC)

4532. Equipment of air raid doctors.

Rev. George C. F.

THE BRITISH MEDICAL JOURNAL (London).

1941, September 13, No. 4210, p. 47.

The Medical Officer of Health, Lord Halifax, gives a list of equipment for ARP doctors: (1) large haversack, (2) torch, (3) wool, lint towel and bandages, (4) tourniquet, (5) scalpel, Spencer-Wells forceps and scissors, (6) iodine, (7) morphine and syringe (8) chloroform and anaesthetic mask (9) funnel and rubber tube, to pass liquid nourishment down to persons who may be trapped. (DAPH)

4533. Experience gained in regard to air raid casualty and hospital services.

PUBLIC HEALTH (London)

1940, October, Vol. 54, No. 1, pp. 3-10.

Inquiries were sent to various health officers to ascertain their experiences in treating persons having undergone aerial attacks, so that the information thus gained could be passed on to other health officers. Some of the replies contain information from county boroughs on a raid in an urban district, on accidents to persons seeking air raid shelters. (DLC)

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4534. Gas precautions for medical supplies.JUSTICE OF THE PEACE (London)

1941, June 7, Vol. 105, No. 23, p. 316.

ARP Handbooks No. 4 and 4a are useful in outlining the precautions considered by the Minister of Health against gas contamination of medical supplies. The storage of medical and surgical supplies in warm and ventilated buildings should provide protection against liquid contamination. Suggestions regarding particular classes of medical stores are given. (DLC)

4535. Health and hospital for war refugees.THE MEDICAL OFFICER (London)

1940, June 29, Vol. 53, No. 1666, p. 224.

A circular issued (June 16, 1940 - No. 2051) by the Minister of Health, to the local health hospital authorities, provides for the accommodation of refugees from Holland and Belgium. Health services are to be made available and refugees are to be made acquainted with the various kinds of services and their costs. (DLC)

4536. Home nursing in reception areas.THE MEDICAL OFFICER (London)

1940, June 29, Vol. LXIII, No. 1666, p. 229.

Householders in reception areas are to receive extra pay of 5 shillings per week per child for caring for ill, unaccompanied children. The doctor will issue weekly certificates stating the nature of the illness, and condition of patient. Children suffering from minor illness and infestation can be treated at hospitals. Home nursing should be employed only where the householder is willing to do it. (DSG)

4537. Hot and boiling water for ARP stations.THE PLUMBER AND JOURNAL OF HEATING (London)

1939, November, Vol. 61, No. 730, p. 303.

The time factor is of great importance where hot or boiling water is needed instantly for dressing stations. The Radiation 80-SB gas water heater meets and satisfies requirements. Hot or cold water is delivered instantly and without attention. The automatic control insures economy, as



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the gas is diminished to a negligible amount when water is not being drawn. The larger radiation water heater, No. 210 M, is recommended for decontamination and cleansing. These heaters fill all the hot water requirements of ARP. (DLC)

4538. The importance of coordinating the military and naval medical services with the civilian medical profession.

Armstrong, Harry G.

THE MILITARY SURGEON (Washington, D. C.)

1937, March, Vol. 80, No. 3, pp. 171-181.

Coordination of military and naval medical services with the civilian medical profession is essential to our whole scheme of national defense. Modern warfare is characterized by sudden and unexpected attacks; the employment of large numbers of troops, mechanized and therefore mobile ground forces; armament and weapons of increased fire power; deadly aerial combat arms; all centering their attacks upon industrial and population centers as the primary objective. The civil population may suffer from: (1) loss of communication and transportation facilities, (2) loss of lighting, heating, cooking, refrigeration, and power utilities, (3) shortage, spoilage, and contamination of food supplies. (4) polluted water supplies and destruction of sanitary power systems, (6) incendiary fires produced by short circuits of damaged electrical conductors, (7) precipitate panic, hysteria, functional neuroses, and frank psychoses, (8) epidemic disease, (9) shifting and crowding of populations, (10) direct casualties from bombs, poison gases, building collapses, and incendiary fires. Military medicine must be kept abreast of armament and tactics. In industrial centers, at least, the military medical knowledge demanded should approach closely that required to care for combat troops. Civilian physicians should prepare themselves for a wartime role either by (1) enlisting in the active reserves or (2) by coordinating, through individual effort, the work of the two branches of medicine. Points of contact available to the two branches are: medical schools (including dental schools), local and state health boards, medical societies, special organizations, the Veterans Administration, the U. S. Public Health Service, the organized reserves, and the National Guard. The medical personnel of military or naval stations adjacent to medical schools should

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contact both the faculty and the students of these schools. If they can interest the faculty in military medicine, these trained medical scientists may become members of the Reserve Corps, and in turn may interest their students and secure greater numbers of desirable candidates for the reserve or regular units. Faculty members should be induced to include the fundamentals of military medicine in their lectures. Members of local and state health boards would be charged in wartime with the organization of medical service for the civilian population. Each branch of the service has something to learn from the other here. County and state medical societies and the American Medical Society are ideal liaison boards between the uniformed and the civilian medical profession. Members of the uniformed services are often invited to county societies. State societies and the American Medical Society may be expected to print articles on military medicine. The two branches can co-operate in large clinics, research institutions, and special and honorary societies. The increasing contributions of the military medical services to pure research should be made available to the civilian medical profession. The Veterans Administration by experience is well qualified for rehabilitation, the specification of initial treatments, and the selection of the proper personnel. The military services and the United States Public Health Service are closely allied in the fields of sanitation and hygiene. The latter would be the logical agency to organize services for population centers. (DLC)

4539. The medical aspects of air raid casualties and air raid precautions and treatment.

Maxwell, Charles L.

THE JOURNAL OF AVIATION MEDICINE (St. Paul)

1941, September, Vol. 12, No. 3, p. 212.

Two types of disability have been brought about by air raids: psychological and physical. Types of missile are: (1) high explosive and incendiary bombs intended for the destruction of buildings, (2) smaller type of bombs (10 to 50 kilos) aimed at people in open areas, (3) machine gun fire directed from low-flying machines, against people and traffic in the street, (4) gas. The types of injury to be expected are direct hits by missiles and shell fragments, injuries from explosion (blast), injuries from falling masonry, burns

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(from incendiary bombs), and effects of gas. The immediate steps in the care of air raid casualties are treatment for shock and hemorrhage, which may be either primary or secondary. Group air raid precautions are best accomplished by means of proper shelter, and air raid casualties represent the problem of the hospital emergency doctor on a grand scale. (DSG)

4540. Midwifery in an air raid.

THE MEDICAL OFFICER (London)

1940, June 29, Vol. 65, No. 1666, p. 230.

Midwives should attend lectures on ARP in order to familiarize themselves with gas masks, air raid shelters, auxiliary fire stations, warden posts and other local services. Their duties include attention to adequacy of blackout arrangements, and the allaying of the fears of the patient. The patient should be taught how to care for herself, and how to protect her bed. (DSG)

4541. Notes on war injuries of the spinal cord and cauda equina.

GUY'S HOSPITAL GAZETTE (London)

1941, February 22, Vol. 55, No. 1372, p. 41.

Injuries to the vertebral column are almost always dangerous. They are divided into two distinct types: (1) closed injuries resulting from aeroplane crashes, parachute descents, motor transport injuries, or injuries due to falling masonry. (2) Open injuries, such as are produced by billets, shell and bomb fragments. Fatal injuries occur when a missile damages the spinal cord and penetrates the thoracic or abdominal cavities or crosses the body and enters both kidneys. Injuries from direct hits from missiles travelling at high velocity may cause damage to the spinal column, and an X-ray picture should be taken to locate the foreign body and to determine the extent of the danger. (DSG)

4542. Oxygen administration -- indications, methods and types of apparatus. (Emergency Medical Services Memorandum 5)

Great Britain. Ministry of Health.

1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller



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Plaza, New York, N. Y. 2d.5¢)

4543. Totalitarian war and preventive medicine.

THE MEDICAL OFFICER (London)

1941, March 15, Vol. 65, No. 11, p. 91.

Summary of a lecture by Professor W. J. Tulloch at the University College, Dundee, on the neglect of preventive medicine, and on its importance in wartime. (DSG)

4544. Treatment of burns in wartime.

Dennison, Wallace G.

JOURNAL OF ROYAL ARMY MEDICAL CORPS (London)

1941, July, Vol. 77, No. 1, p. 14.

Discussion of most satisfactory method of treating burns. Severe burn cases require the attention of an experienced anesthetist. They should be isolated in a separate ward, or nursed under a shock cradle after treatment. Frequent blood pressure readings should be taken, and when low, intravenous and rectal fluids should be administered. The usual signs of shock supplemented by blood pressure readings show the possible time of expected improvement. (DSG)

## MENTAL HEALTH

4545. Air raids and mental hygiene.

THE MEDICAL OFFICER (London)

1941, April 26, Vol. 65, No. 17, p. 137.

Aerial bombardment and the threat of air raids has had little or no appreciable effect on the civilian population, even though careful preparation was made to take care of the acute mental cases. Hospital, outpatient clinics, and extensive training were organized for mental health workers. As a matter now of common knowledge, the wards set aside remained empty, the clinics dealt with a number of cases, and health workers were not called on. This was due to the stoical and undaunted determination of the populace, in which the children reflected the attitude of their elders. (DSG)

## MENTAL HEALTH

4546. Neurosis in wartime,THE MEDICAL OFFICER (London)

1940, January 6, Vol. 63, No. 1641, p. 2.

The success of the treatment of raid neurosis depends on the morale of the population. Lectures should be arranged by experienced medical officers. Hospital cases should have greater security than is found in their own homes and should have opportunity for occupational and recreational therapy with games and physical exercise under experienced welfare workers. (DSG)

4547. Psychiatric casualties in London.

Duff, D. G.

THE BRITISH MEDICAL JOURNAL (London)

1940, November 9, Vol. 2, No. 4166, pp. 645-6.

Commenting on Dr. George Pegge's article (October 26, p. 553) on psychiatric casualties in London, the writer claims that the raids have created very little psychiatric disturbance. The psychiatric outpatient department's attendance has decreased during the war, and in one instance a single psychiatrist was able to conduct the work of the department. Those suffering from constitutional hysteria, hypochondria, and obsessions have been little affected by loss of sleep and constant danger. The essential elements in reducing war-time neurosis have been the herding together of individuals in shelters and the levelling out process. (DSG)

4548. Psychiatry in wartime.THE MEDICAL OFFICER (London)

1941, March 29, Vol. 65, No. 13, p. 106.

Apparently in areas which have felt the strain and stress of war, the mental health of the nation has been maintained with heroic and courageous spirit. Some mental patients have reflected the trying conditions under which they live, especially by talk about fifth columnists, parachutists, and hallucinatory talks about Hitler, Goebbels, Goering, and many others. Fortunately up to now the lives of the people in some parts of the British Isles have not been too greatly disturbed, and there is little information available regarding the effect of air raids, sleepless nights, or living conditions in causing psychosis or neurosis. Under

## MENTAL HEALTH

certain conditions we all have a taint of fear, and war is terrifying, but the best psychological prescription is to carry on as far as possible with work and to keep cheerful. (DSG)

4549. Psychodynamic aspects of the war neurosis.

Meyer, Maskin

PSYCHIATRY (Washington, D. C.)

1941, February, Vol. LV, No. 1, pp. 97-99.

Severe and protracted neurotic display is greater among the military combatants than among civilians. One-seventh of those discharged and one-third of the wounded from the British army were unfit because of functional neuroses in World War I, while in the United States one billion dollars was expended for psychiatric disablement. Neurotic symptoms of an overt florid character have been observed in civilians in time of war. Emilio Mira, in an article in the British Medical Journal (1939) entitled "Psychiatric Experience in the Spanish War", stated that hunger in the air raid shelters of Spain during the Civil War was a greater threat than bombardment. As a result of bomb explosions in London, many civilians have suffered some degree of derangement of consciousness. Amnesia was observed in some who were not unconscious. Tremor, caused by gunfire, left some civilians weeping and emotional. Anna Freud and Glover, however, denied observing among London civilians any case of "shell-shock". Rickman has stressed the importance of assigning duties to civilians during air raids. The repeated bombing of London has made the civilians used to it and because of this, there has been a reduction in neurotic disturbances, according to Glover. (DLC).

4550. A psychologist's contribution to air raid problems.

Dundson, M. L.

MENTAL HEALTH (London)

1941, April, Vol. 2, No. 2, pp. 37-41.

The writer emphasizes the invaluable service a psychologist can render to persons suffering from shock. A broad program has had to be instituted to cope with many mental cases attributed directly to the war. The psychologist's duty is to aid depressed persons by helping them to find relatives, readjust their living quarters, make adjustments



## MENTAL HEALTH

to new environment, fill out various forms for war damage insurance, etc. The child guidance clinic can be of great help in readjusting the child to his new environment making a study of various symptoms associated with shock and prescribing proper treatment. The psychologist not only treats cases in the rest centers, air raid shelters, and first aid posts, but also those in homes which show no immediate indication of shock but have latent symptoms. (DSG)

4551. Some preliminary notes on mental health for air raid victims.  
Norman.

MENTAL HEALTH (London)

1941, January, Vol. 2, No. 1, pp. 1-7

In this article on the treatment of mental cases arising from air raid bombings, the author stresses the importance of thorough study of each case before starting any type of treatment. Some victims need only rest and quiet; others need medical care. The nurse or social worker can play an important role in dealing with these cases. Of 1700 evacuees in a certain bombed area in London, only 7 per cent needed special medical care from the Mental Health Emergency Committee. Most of this 7 per cent had had previous symptoms of mental disorder. Several case histories are given. (DSG)

4552. Verursachung Auslösung und Verschlimmerung endogener Nerven-und Geisteskrankheiten durch Kriegseinflüsse (The cause, incitation and aggravation of endogenous mental diseases influenced by war)

Panse, Friedrich,

MEDIZINISCHE KLINIK (Berlin)

1940, January 5, Vol. 36, No. 1, pp. 1-3.

The latest researches in neurology and pathology show many ways in which wars affect the nerves of individuals. Defective nervous systems on the borders of hysteria or schizophronia frequently lose their stability completely through such war hazards as overexertion, privation and self denial, injuries with shock and loss of blood, brain concussion, oxygen deficiency, extreme temperatures, infectious diseases. Heredity and family surroundings play an important role in this respect. (DSG)

## MINES

4553. Structural air defense applied to the planning of a combined coal mining plant.

Roelen, W.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

.1939, Vol. 9, pp. 5-8.

Mining works are much exposed to air attack, and, even in new works, it is impossible to conceal the head-gear, chimneys, gasometers, and buildings for dressing and refining coal. It is therefore necessary to protect coal mines as far as possible by a dispersed arrangement of buildings, by giving protection to the personnel, by erecting auxiliary or alternative machines and apparatus, and by a type of building which can be easily replaced or repaired. Lastly, the roads between the buildings should be wide and spacious. These requirements, and the garden city for the workers, will of course necessitate a larger site for the works. It is important that the mine be kept working, with adequate protection for the workers, even in emergency. At the same time the new works must be economical and practical. Therefore coal must be dressed and loaded near the pit shaft. The boiler house, in which coal from the mine is used, should be behind buildings. The plant for producing compressed air, electricity, etc. is ranged behind the boiler house. The switch and power distribution houses form the third member of this organic whole, which would be situated on one side of a wide road. On the opposite side of this road is a corresponding group of buildings in three divisions - for workshops, stores, and personnel - each located where it is most effective from the point of view of the efficiency of the whole organization. By means of this scientific planning, the work of ARP repair parties is facilitated. The road through the works allows easy access to damaged sections. The staff rooms are near the entrance, and therefore as far as possible from the actual works, which would be the target for any attack. Spaces between buildings should be planted with turf, not covered with ashes or earth.

(Building Science Abstracts, 1939, No. 765) (DLC)

MORALE. See also MENTAL HEALTH: SHELTERS - MORALE

4554. Nerves versus Nazis.

Langdon-Davies, John

1940, London, George Routledge, Pp. 64.

This book is intended as an aid to civilian morale, "This

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is not only a war of machines; it is a war of nerves. We must learn how to win the war of nerves. We need a manual of first aid for the mind, and in this pamphlet is a modest first attempt along these lines." The central theme is that, where there is an efficient ARP "air raids are not very deadly." (DLC)

MULTIPLE - FUNCTION SHELTERS, See SHELTERS, MULTIPLE FUNCTION.

## MUSEUMS.

4555. Le danger aerien et la sauvegarde des objets d'art aux Pays-Bas.  
(The aerial danger and the protection of objects of art in the Netherlands)

Ronart, C.

REVUE GENERALE DE DROIT AERIEN (Paris)

1939, January-March, Vol. 8, pp. 68-75.

The Netherlands issued in 1935 their first law (later found ineffective) for the protection of works of art and of historical and scientific treasures against air raids. Dr. Kalf, director of the governmental bureau for the protection of monuments and of art-treasures, has, in connection with the report of M. Sandberg, observer in Spain during the Civil War, made a report on which are based the general instructions issued by a special commission on the means for the protection especially of monuments, art-objects, churches, and museums against air-raid attacks. According to that law, effective protective measures for movable works of art should be taken by the owner of such works, while monuments, churches and museums are under governmental protection and international regulations. Thus each room in the municipal museums of Amsterdam is provided with a "slide" for the swift removal of all artistic articles and objects in that particular room. They are removed into cellars where they remain but a short time before their further removal into safe and definite shelters. Large cities, like Amsterdam, Haarlem, The Hague, Leyden, and Delft, are situated near the Dunes, in which shelters have been constructed with steel ceilings two meters thick. In some cities cellars of sufficient depth are already found, as, for instance, the cellars of the National Bank in Amsterdam.



## MUSEUMS.

In each museum in Holland are also placed a number of sand-bags. Detailed instructions are issued for action to be taken by employees in case of fire or other threats. According to Governmental orders each museum maintains a list of its most precious objects, which in case of danger, must be removed at once to safety. In the case of large monuments, absolutely adequate protection is impossible. The protection of such monuments, however, is covered by the stipulations issued by the International Conference of Washington in 1922, upon the suggestion of the Netherlands. In this report the government proposes the inviolability of certain villages and monuments of arts, which in no case should be subjected to air-raid attack by the enemy. These places, like the historic village of Veere, or the famous Abbey of Middleburg, must be considered as immune. The following three protective measures are also in force: (1) in collaboration with the department of national defense, a list of monuments has to be issued, which should be excluded from any air-raid attack, (2) establishment of a governmental bureau under direction of a military engineer and especially devoted to the protection of edifices of art, (3) formation of so-called "Art Battalion", especially entrusted with the protection and guarding of art monuments, and their transport to safety if necessary. In general, it is, however maintained that the best protection is provided by active defense. In this connection, the Netherlands demand that institutions of great national interest, like large manufacturing places and electric-power stations, should form their own corps of volunteers within their own plants: these volunteers to be armed with the necessary weapons for defense. (DLC)

NEW BUILDINGS. For items on shelters in new buildings see SHELTERS - DESIGN AND CONSTRUCTION.

NOVELS. See FICTION AND DRAMA.

NURSING SERVICE. See MEDICAL AND NURSING SERVICE.

OBJECTS OF ART. See MUSEUMS.

## ORGANIZATION - CANADA

4556. Civil defense in Canada.

Scott, W. J.

FIRE ENGINEERING (New York)

1941, August, Vol. 94, No. 8, pp. 414-415.

This article gives account of civil defense in Canadian municipalities. Under the ARP program volunteers must qualify and the equipment is provided by the Government. (DLC)

## ORGANIZATION - FRANCE

4557. The role of municipal authorities in organization of passive defense.

LA TECHNIQUE SANITAIRE ET MUNICIPALE (Paris)

1936, Vol. 31, pp. 368-373.

The organization of defense includes the following: plans for the evacuation from cities of civilians not engaged in essential work; the protection of individuals by the supply of gas masks; the protection of communities by providing shelters for the general public and for special services; protection of buildings from the effects on incendiary bombs. Danger of fire may be minimized by a roof covering of steel and fireproof material, a floor covering consisting of steel units assembled elastically on a refractory, heat insulating material, and the use of sand as protection for floors. General consideration is given to requirements for shelters, including airtightness, means of access, dimensions, air conditioning, and other services.

(Building Science Abstracts, 1937, No. 640) (DLC)

## ORGANIZATION - GERMANY

4558. Die Grundlagen des Luftschutzes (The fundamentals of air protection)

Meyer, J.

1935, Leipzig, S. Hirzel, Pp. 328, illus.

Problems relating to protection from air attack are discussed, particularly in reference to conditions in Germany. Consideration is given to the nature and effects of high explosive, incendiary and gas bombs, detailed information

## ORGANIZATION - GERMANY

being given on the toxic and other gases used and on means of protection from them. One section is given to the organization and equipment of protective measures of many kinds, and of first aid services. Various methods of protecting existing buildings and of constructing bomb-proof structures and special air raid shelters are also discussed, as are methods of town planning with a view to reducing risks from air attack.

(Building Science Abstracts, 1935, No. 1825) (DLC)

4559. Der Mensch und die Luftgefahr (Man and the danger from the air)  
Hampe. E.

1936, Berlin, Räder Verlag. Pp. 117, illus.

This manual is devoted to a general survey of the problems involved in protection from air raids. Consideration is given to the strategy and tactics of air attack, the various types of explosive, incendiary and gas bombs employed and their effects, and to military and civil protective measures, including the planning of towns, the strengthening of existing buildings and the design and construction of bomb-proof structures. An outline is given of German practice in this field.

(Building Science Abstracts, 1936, No. 1320) (DLC)

## ORGANIZATION - GREAT BRITAIN.

4560. Air raid defense. (civilian)  
Wachtel, Curt.

1941, Brooklyn, Chemical Publishing Company. Pp. 240. tables, charts.

The author, now an exile in the United States, organized the pharmacological section of the Kaiser Wilhelm Institute during the World War, and served as instructor at the Military School of Noxious Gases. After the war, he made a survey of noxious gases in England, France, Russia, and the United States and acted in Russia as consultant to the Civil Air Defense. The book is in three parts: (1) Planning and organization of air raid defense (theoretical discussion of totalitarian war, theory and practice of destruction, air defense, economic aspects, defense of home and community), (2) Technical means of air raid defense, (protection against gas, fire service, protection



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against explosives, hygienic and utility requirements, air raid shelters), (3) Air raid defense at mobilization (military activities, air raid alarm, rescue in accidents, health defense, coordination of air raid defense). The last two parts include tables, charts, and other technical directions which can be understood by the general reader. (DLC)

4561. ARP handbook.

Macmillan, D. N.

1939, Dundee, Simmath Press. Pp. 172, illus.

Aerial warfare. Aerial tactics: an actual bombing attack may be delivered in one of four ways (1) high altitude precision bombing at 10,000 to 20,000 feet, (2) diving attack from a high altitude but with actual release of the bombs from a comparatively low altitude, (3) gliding attack in which the attackers approach their target at a very high altitude, shut off their engines, and glide quietly to release their bombs from a medium altitude, (4) low altitude bombing, or hedge-hopping. The aerial weapons are bombs (high explosive, incendiary, gas), machine guns, gun spray. Shelter policy and structural precautions. Protection for people at their homes be provided either by the family shelter on or near the homesite or by the public shelter for several families, adjacent to a group of houses. In providing public shelters, the main factor must remain accessibility. Many small shelters in immediate proximity to homes are definitely preferable to large shelters at greater intervals, because dispersed shelters provide protection available at a moment's notice. Structural precautions involve the adaptation of existing buildings to give shelter protection and the modification of plans for new buildings to provide such protection. Other forms of collective protection. Shelters in existing buildings: refuge rooms. Preparation of a gas-proofed refuge room. Special structures for the protection of persons: shelter trenches. Against high explosive, incendiary, or gas bombs, the shelter trench, where ground is available, undoubtedly provides the highest degree of protection for a moderate outlay. Non-gasproofed trenches. Above ground shelters. Lean-to shelters. Internal shelters. Ventilation of special structures. Precautions for protection of food and water against gas. The

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protection of machinery and industrial plant. The use of reinforced concrete as a shelter material. War gasses, their nature and properties. Classification by persistence. (1) Non-persistent gases are those which when liberated in the atmosphere are rapidly converted into true gases or smokes. Clouds of such continue to be effective only until dissipated by dilution with the surrounding air. (2) Persistent gases are those which are normally liquid. They contaminate objects with which they come into contact, and continue to give off toxic or irritant vapors for a considerable period. Classification by effects. (1) Lung irritant gases, (2) nose irritant gases, (3) tear gases, (4) blister gases or vesicants. The lung irritant gases: gases the bases of which are phosgene and chlorine. The nose irritant gases: diphenylaminechlorarsine, diphenylchlorarsine, diphenylcyanarsine. The tear gases: chloracetophenone, ethyliodoacetate, bromo-benzyl-cyanide. The vesicants: mustard gas, Lewisite. Factors affecting the use of gas in war. The behavior of gas on release under war conditions will depend primarily on whether the gas used is one of the persistent or non-persistent gases. In the case of non-persistent chargings, the whole contents of the bomb or shell will form a cloud near the point of release, and this cloud will drift along with the wind. A bomb containing persistent gas will make a large splash of liquid around the bomb crater, and will also cover a considerable area with fine droplets. The area contaminated by gas spray will vary considerably in size and shape according to the relation between the line of flight of the aeroplane and the direction of the prevailing wind. The behavior of any gas whether persistent or non persistent will be greatly affected by the meteorological conditions prevailing at the time of release. The chief factors are: wind, sun, temperature, fog or rain, the nature of the ground on which the gas is released. Individual protection against gas. The service respirator: this is the type used by the Fighting Services. It will be provided for those members of the Air Raid Precautions Services whose duties may necessitate their entering deliberately, and remaining in, high concentrations of gas for prolonged periods. The general civilian respirator: affords equal protection with above types, but the period of protection is shorter. Importance of care of respirator.

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Respirator containers: the canister, the absorbent filling, the mechanical filter. Protection of the body. Protective clothing: material used, protection afforded, composition of protective outfits, limitation of protective clothing. Anti-gas protection for small children. Medical effects and first aid treatment for gas. Air Raid Precautions intelligence and communications. Information prior to attack. Information during an attack and immediately after. Telephone service. Message-carrying agencies. Other means of communication. Air raid damage reports. Report centers. Report center procedure, including control room. Local authority schemes. (1) The intelligence services: (a) police, (b) air raid wardens, (c) telephone service and messenger agencies, (d) specialist intelligence services, (e) public warning system and local gas alarm. (2) Humanitarian services: (a) first aid parties complete with transport, (b) first aid posts, (c) casualty clearing hospitals, (d) veterinary service. (3) Salvage and repair service: (a) rescue and demolition, (b) decontamination service, (c) technical repair services, (d) fire services. (4) The ancillary services: (a) supply service, (b) transport service, (c) stores and equipment service. ARP schemes for individual businesses and factories. Air raid shelters: warehouse type, manufacturing works type. Protection of key personnel. Protection of buildings, machinery, plant, etc. Inflammable and dangerous stores. Air raid warning system. Lighting restrictions. Emergency communications. Medical service. Fire. Rescue work. Decontamination. Emergency repairs. ARP training in peace and control in war. Leadership: responsibility. Control of training. System of training. Control in war. Appendices: (a) war gases: chemical name, formula, specific gravity, boiling point and freezing point of each; (B) Persistence, solubility, stability, penetration, insidiousness, delayed action, universal action, and cumulative action of mustard and Lewisite gases; (C) thickness of material to afford protection against splinters from bombs up to 500 lb. which explode not less than 50 ft. away; (d) methods of decontamination for road surfaces, structure of buildings, household articles, vehicles; (E) decontamination of clothing by boiling. (DLC)



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4562. ARP surveys and public shelters.

Skinner, R. T.

THE ARCHITECT AND BUILDING NEWS (London)

1939, November, Vol. 160, No. 3699, p. 137.

The main objects to be achieved by air raid precautions are: (1) to save civilian life, (2) to preserve civilian morale, and (3) to prevent the disorganization of industry. Before a scheme for the protection of the civilian population of any district can be worked out, certain elementary facts must be ascertained: (1) density of population, (2) geographical features, (3) underground rivers and water-courses, (4) distribution of water mains, and (5) characteristics of existing buildings. (DLC)

4563. First French Gascoigne prize essay (military)

Manderville Roe, E. G.

ROYAL UNITED SERVICE INSTITUTION, JOURNAL (London)

1940, February, Vol. 85, No. 537, pp. 8-20.

The development of air forces has increased the burden imposed on Home Defense. Discusses its affects on the role and organization of the regular and territorial forces in the event of a major European war. The effect of air superiority; air attacks upon ships; air attacks upon civilian morale; defense of industrial areas; passive defense divisions, road control, etc. Also a summary of the changes required in command and organization of Home Defense against aircraft attack. (DLC)

## ORGANIZATION - POLAND.

4564. Simulacro de defensa contra aeronaves en Varsovia (Novembre 1933)  
(Simulated defense against air attack in Varsovia, November 1933)  
Quintana.

REVISTA DE ESTUDIOS MILITARES (Madrid)

1934, February, Vol. 5, No. 2, pp. 127-134.

A detailed account of the carefully prepared defense of a Polish city of one and a half million inhabitants against a simulated air attack. The preparatory phase involved instructions of school children, organization and functioning of an aerial defense league, committees in each house to observe blackout regulations, press, radio, and poster diffusion of regulations and information, purchase of gas masks, public utility regulations, shelter and first-aid provisions, regulations for street clearance, and general

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observance of order during the hours of a simulated day and night attack. The day attack lasted three hours and twenty-five minutes. At 9.50 the alert was sounded. People hurried to shelters; street cars stopped and were emptied instantaneously; automobiles drew up at each side to leave the middle of streets clear; fire engines passed rapidly; groups of soldiers with arm bands stood ready to simulate, by bottles of smoke and gas, the points hit by bombs; trucks rolled by with decontamination personnel; members of the Red Cross scattered to their different stations throughout the city; pursuit planes and bombers appeared simultaneously with the din of anti-aircraft cannon; columns of smoke rose and explosions were heard. Finally the planes disappeared, the guns ceased firing. The decontamination squads, first-aid groups, and firemen were seen feverishly working. A few moments later, sirens, radio and telephone announced the end of the exercises. In the night attack no lights were visible a short distance away. At the right and above each shelter was a lamp covered with a thin bluish paper. At intervals of three or four blocks of houses, small reddish lights indicated the direction of shelters. Policemen provided with pocket lanterns with bluish reflectors directed the necessary traffic and examined credentials of pedestrians. They were assisted by first aid groups who took charge of persons supposedly gassed. The few private automobiles had dimmed lights. The fire apparatus, stationed at points previously arranged for supposed fires, had brighter lights. The central railroad station showed no lights at all except at the arrival or departure of a train. Police and aid groups kept watch at platform entrances. None could leave the station, but entrance was permitted. The post office extinguished its lights and only pocket lanterns of employees were seen at intervals. The alarm signals coming from factories on the outskirts, were not clearly heard in the center of the city. For the future it was decided to establish sirens in telegraph offices. (DSG)

## ORGANIZATION - SWEDEN

4565. Kraftvferkernes luftbeskyttelse i Sverige. (Air raid protection of plants in Sweden)  
 INGENIOREN (Copenhagen)  
 1938, July 2, Vol. 47, No. 45, p. E.72.  
 Stresses fundamental importance of ARP for water, gas, and



## ORGANIZATION - SWEDEN

electric plants and the participation of these plants during blackout, i.e., in reorganization of street lighting. Governmental control of ARP provides, among other matters, that power plant wardens shall be selected from classes not eligible for military training. Routine aspects and problems of ARP wardens, training period and curricula. So-called "companies" are engaged in preparing ARP in strategic plants: alarms, fire extinguishers, bomb proof roofs, wartime lighting, blackouts etc. The costs are estimated at approximately 19 million kronor of which 15% is for bombproof roofs, 45% for other devices and 40% for military equipment. The latter will comprise 8mm. anti-aircraft machine guns, 40 mm. automatic cannons and 75 mm. far reaching anti-aircraft cannons. (DLC)

## ORGANIZATION - U.S.A.

4566. Bulletin No. 2 (enrollment and control of air raid wardens)  
New York. State Council of Defense.  
1941, Albany, New York. Pp. 10

This bulletin lists duties of air raid wardens, describes operation of control and report centers and gives a four-page form to be used in the enrolling of air raid wardens. (DLC)

4567. Bulletin No. 3 (Charts A and B - Organization and functions)  
New York. State Council of Defense.  
1941, Albany, New York. Unpaged.

"The functional activities of Civilian Defense are divided into those of organization, training and emergency operations. These activities are set forth... and listed to indicate the most essential which should be given vigorous application." Chart A shows the state organization: comprising the Director of Civilian Defense, with headquarters at Albany, and, subordinate to him, the various state agencies and the assistant director, the deputy directors and the councils of counties, cities and towns. Chart B lists the units of primary importance in the state organization, enumerating their functions: police, fire, water supply, health and sanitation, evacuation, transportation, communication, shelter and food, air raid, administration and records. (DLC)



## ORGANIZATION - U.S.A.

4568. A civilian defense volunteer office; what it is, how it is set up, what it does, how to organize it.  
U.S. OFFICE OF CIVILIAN DEFENSE.  
 1941, Washington, D. C. Pp. 35, illus.  
 The training of volunteer workers and the organization of the work. Lists volunteer opportunities suggested by the Federal agencies active in various fields. A list of forms that will be needed by volunteer offices, with illustrations of some of them. (DLC)
4569. Enrolled volunteer worker groups for civilian protection.  
U.S. OFFICE OF CIVILIAN DEFENSE.  
 1941, Washington, D. C. Pp. 11, illus.  
 "Groups and services for which special training is necessary are described in this pamphlet. Sleeve insignia for each of the services illustrated". (DLC)
4570. If the bombs come to us.  
Mitchell, John.  
THE LIVING AGE (New York)  
 1941, August 8, Vol. 36, pp. 532-538.  
 Certain plans and protective precautions against air raids on our cities are discussed. Military and civilian, or active and passive defense are the two categories of precaution against air attack. Instructions and preparations are being formulated for the protection of the population of New York City. The shelter problem of New York city is greater than that of London. (DLC)
4571. "It can't happen here." But suppose it does?  
THE OCTAGON (Washington, D. C.)  
 1941, July, Vol. 13, No. 7, pp. 5-7.  
 A review of reports of the Washington, D. C., chapter A.I.A., Air Raid Protection Committee. Blackouts, fire wardens, home defense brigades, air raids and ARP (air raid protection) are now being discussed by Americans. Some feel that the need for such protection is too remote for vital concern, that lives of civilians here are not in jeopardy. Others deem it necessary to know how to quickly and safely evacuate a building and prepare a bombproof shelter; how the shelter should be constructed, ventilated, serviced, etc., in case of a possible air raid. Architects, having

## ORGANIZATION - U.S.A.

made special study of the shelter problem, anticipated the present needs and are prepared to meet them. American architects are continually informing themselves on such specific and general problems of ARP as: behavior of construction materials and methods under new conditions of bombing and conflagration; "splintering" of concrete; the feasibility of brick masonry; protection from glass and wholly new factors of vacuum, suction, and concussion; special measures required in connection with new work, stabilization of existing structures, rehabilitation, and demolition. (DLC)

4572. It's yours, it's mine, it's everybody's job.

LaGuardia, F. H.

THE AMERICAN LEGION (Chicago)

1941, August, Vol. 51, No. 2, pp. 4, 5, 38, 39.

Plans for organizing and training persons for civilian defense are under way. This service will cover every block in every city and all rural districts. Section commanders, squad commanders, block commanders, and wardens will be commissioned and non-commissioned officers. Canteen workers will be trained to prepare and serve food to the wardens. (DLC)

4573. Protection of industrial plants and public buildings.

U.S. OFFICE OF CIVILIAN DEFENSE.

1941, Washington, D. C. Pp. 8, chart.

Protective organization; fire services; police services; medical services; maintenance services. An appendix gives lists of equipment. (DLC)

## ORGANIZATION - U.S.S.R.

4574. Protivovozdushnaia i protivokhimicheskaiia zashchita naseleniia  
(Protection of the population against aerial and chemical warfare)

PRAVDA VOSTOKA (Uzbekistan S.S.R)

1941, June 14, No. 139 (5065) p. 1.

Stresses the necessity of increasing the population's preparedness and indicates that the Osoaviakhim (Civil Defense) organizations of Uzbekistan have carried out

36% of the yearly plan during the first quarter of 1941. Points out, however, that not all sections and regions of the Republic are up to the mark. For instance, Tashkent's self-defense preparations are inadequate and the Stalin and Kirov regions do not have a single civil defense committee. Beginning on July 8th all-Russian chemical competitions are to start. The objective is to encourage preparedness; to mobilize Osoaviakhim for the early execution of the yearly plan and to check its achievements in practical preparation of the population in ARP. Actual practice in ARP with the widest possible participation must be stressed. All citizens must know the rules of aerial and chemical alarms, must be able to camouflage their places of work and their places of abode, and must be able to work in gasmasks. People must learn how to use first-aid kits and to render first aid to themselves and their comrades in case of injury. The population must also be prepared to cope with enemy parachutists, clear away the results of air raids, combat fires, decontaminate stricken areas, and rebuild. Recently an instruction drill on dealing with enemy parachutists, carried out in a section of the Tashkent region, showed good work on the part of the members of the Osoaviakhim, but revealed poor training on the part of the rest of the participants. As an example, most of the workers in a canning plant had not passed their ARP tests and many did not know how to cope with a fire caused by an incendiary bomb. (DLC)

OVERSEAS EVACUATION, See EVACUATION - OVERSEAS.

## PAINT

4574. Luminescent paint for passive defense.

PAINT, VARNISH, LAQUER EMAMEL AND COLOUR MANUFACTURE (London) 1938, Vol. 8, pp. 139-140.

A new luminescent paint contains a powder obtained from an alkaline earth sulphate, a salt or salts of heavy metals, a fusible substance, such as lithium, sodium or potassium, and magnesium salts, the whole being heated to between 800° and 1200° C. and subsequently ground; the powder is



## PAINT

mixed with a special transparent varnish. The paint may be applied by spray, dilute and in extremely thin coats, and dries in one or two hours. When brushed on, it requires about a month to dry. As drying is slow, the paint should be used in well protected places or on panels which can be fixed to a wall when dry. The paint should be subjected to as strong a light as possible until its luminescence is to be utilized. Surfaces so painted could not be detected from aeroplanes flying as low as 600 ft.

(Building Science Abstracts, 1938, pp. 139-140) (DLC)

4576. The use of luminous paint in air raid protection.

Fick, E. A.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1937. pp. 154-157.

The nature and illuminating capacity of luminous paint are considered with special reference to its use in air raid shelters and its value as a light source in the case of failure of the light supply. Luminous paint should be applied only by those experienced in its use. It may be used in the form of a paint ready for application with a brush or in the form of a crystalline pigment powder. In the latter form it is applied by spraying to aluminum sheets which can be bent to different shapes, cut, and affixed with nails. The use of the painted metal sheets in air raid shelters is recommended for various reasons in preference to direct application of the paint to the walls. Zinc sulphide and strontium sulphide luminous paint, the one a yellow-green and the other a bluish green, have a relatively intense and prolonged fluorescence and are for that reason suitable for the purposes of air raid protection. Strontium sulphide paint, however, is very sensitive to moisture and disintegrates with generation of hydrogen sulphide. It could be used only if protected by an air-tight covering, e.g. glass; varnish has proved either ineffective or too costly. Protected with glass it could be used advantageously for outdoor signs, especially as it requires exposure to a strong light, after which its luminosity will last for days, decreasing very slowly. With zinc sulphide paint a short exposure to a weaker source of light will result in marked luminosity but of shorter duration. The efficiency of luminous paint, it is pointed out, is affected only by damage to the paint from outside causes, and -used in air raid shelters - it would have the advantage of providing a reliable, if weak, source of light.

(Building Science Abstracts, 1937, No. 2350) (DLC)

## PERIODICALS

4577. OCD news letter; official bulletin of the Office of Civilian Defense.  
Office of Civilian Defense.  
 1941, Washington, D.C. Office of Civilian Defense.  
 "The purpose of the Office of Civilian Defense News Letter is to call widespread attention to plans and programs, after they have been transmitted officially, to report successful experiences of states and localities in the development of Civilian Defense activities, and to encourage states and localities in the development of programs adequate to meet every civilian need....No attempt will be made to publish it regularly." (DLC)

## PERSONNEL

4578. Auswahl und Ausbildung des Personals fuer den Heimatluftschutz  
(Selection and training of the personnel for home defense)  
DEUTSCHE LUFTWACHT (LUFTWEHR) Berlin.  
 1938, April, Vol. V, No. 4, pp. 156-160.  
 This refers to "passive" defense-means, divided into two groups. One of them comprises everything referring to the population itself, choice and designation of shelters, their improvement and shape, special protective measures against gas, gas masks, and their use and distribution. The other group comprises the organization of personnel, police, firefighters, nurses, disinfection experts, sanitary service. These services are to be established in each state to educate the population. The whole is under complete supervision of the military authorities in peace as well as in war. It is logical that the civil personnel, familiar with passive air defense, do the teaching. (DLC)
4579. British medical student's association.  
Tinker. C. M.  
BRITISH MEDICAL JOURNAL (London)  
 1941, August 23, Vol. 2, No. 4207, p. 278.  
 The order of the Ministry of Labor, making part time military training compulsory for the medical student, was brought to the attention of the B.M.S.A. Council. The delegates contend that military training and ARP work are

## PERSONNEL

inconsistent with medical studies, and that proper aid at the proper time is the proper procedure. The activities of various medical colleges were discussed. (DSG)

4580. Personal fuer die Dienst-zweige im passiven Luftschutz-dienst  
(Personnel for the service branches in passive air defense service)  
DEUTSCHE LUFTWACHT (LUFTWEHR) Berlin

1938, April, Vol. V. No. 4, pp. 158-160.

The organization of the passive air-defense-service requires an enormous personnel- several hundred thousand people. The executive personnel, commissioned and non-commissioned officers, have to attend a special educational course in work and duties. The personnel of the police, fire, sanitary, and disinfection troops is composed of volunteers, especially selected for their fitness; they are obliged to attend, throughout the year, educational courses. They should be people exempt from direct military service, and work under the direction of former commissioned and noncommissioned officers. (DLC)

4581. Selbstschutz auf Grund des Luftschutzgesetz (Self protection on the basis of the air raid defense law)

Lohmann, M.

DIE MEDIZINISCHE WELT (Berlin)

1937, July 24, Vol. 11, No. 30, p. 1047

The organization and training for self protection is carried out by the National Air Raid Defense League. According to this law all Germans are obligated to participate in the program of passive defense, except the aged and physically unfit or those engaged in military affairs. The police authorities will see that this measure is carried out. Persons liable to this service will be held responsible for a reasonable amount of work; they are expected to be tolerant, and not to shirk this duty either by omission or oversight. Neglect of duty will be punished by imprisonment or a fine of 250 marks. (DSG)

## PERSONNEL - TRAINING

4582. Air raid precautions in Liverpool.  
INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS. JOURNAL (London)  
1938, August 2, Vol. 65, No. 4, pp. 253-260.

This material was prepared to assist surveyors and engineers



## PERSONNEL - TRAINING

in training air raid personnel. ARP includes (1) rescue work, (2) shoring up and demolition work, (3) road repair work, (4) general decontamination work, and (5) splinter proofing work. The rescue parties consist of a leader and seven men whose duty is to rescue any victims trapped in damaged buildings; the shoring up and demolition parties consist of twenty men including the leader, who is responsible for demolishing portions of large structures. Road repair gangs will clear road obstructions caused by bomb craters and debris from buildings, and will repair damaged cables and pipes in the roads. Squads provided with sand bags are to carry out the task of "splinter proofing". The school where the training is to be conducted includes: (1) gas chamber and air lock, (2) lecture rooms, (3) decontamination rooms, (4) dressing rooms, (5) mess room, (6) store room, (7) kitchen, (8) spray room and rest room. (DLC)

4583. Air raid precautions in Liverpool.

Hamer, Herbert.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS. Journal (London) 1939, February 14, Vol. 65, No. 18, p. 927.

"The object of this paper is to provide information for Engineers and Surveyors at the Institution of instructional centers for the training of personnel in the specialized duties of rescue, shoring up, and demolition parties." The duties of rescue parties are most dangerous, and should be carried out with care. In most cases the men are chosen from the sewerage section and housing department of the corporation. The men are trained during working hours, they receive their normal rate of pay, and each class is composed of approximately 20 men. (DLC)

4584. Bulletin No. 4 (Duties and training of air raid wardens)  
NEW YORK. STATE COUNCIL OF DEFENSE.

1941, Albany, New York. Pp. 12, charts.

The completion of efficient organization of air raid wardens is immediately necessary in the interest and welfare of the people of the state of New York. There is presented herewith a general outline of the duties involved and the training necessary to effect such an organization. Contents: Guide for selection of air raid wardens. Peace-time duties of wardens. Records.

## PERSONNEL - TRAINING

Warden's identification. Duties of wardens. Equipment required at warden's post. Reports of casualties and damage. Buildings which can be used as shelters. A list of subjects to be included in training courses. (DLC)

4585. Opyt raboty s domokhoziaikami (Training the housewives for air raid defense)

Zissorman, K.

KHIMIA I OBORONA (Moscow)

1938, January, No. 1, p. 22.

The author describes her work among housewives. Training for air raid defense includes theoretical and practical lectures and a series of demonstrations. There are five topics: (1) general information on ARP, (2) defense against toxic gases - the construction and use of a gas mask. (3) first aid- the symptoms and effects of various gases; their antidotes and treatment with the help of easily accessible materials. Practical training - exercise in gas masks; drill for gas attacks; duties of participants in case of emergency. (4) Fire control - rules for preventing fires; role played by each individual. (5) Organization of ARP units in dwelling houses. (DLC)

4586. Podgotovka lichnogo sostava komand veterinarnoi pomoschi. (Training of personnel in the veterinary service)

Borisoglebskii, A. S.

VESTNIK PROTIVOVOZDUSHNOI OBORONY (Moscow)

1937, No. 2, pp. 41-44.

A good training program is planned in advance in every detail. The main objective must be to train people to give first aid to animals as quickly as possible. A minimum of 90 hours should be given to the training period. Interesting lectures, a 100 per cent attendance, and practical training are essential to the program. The basic problems to study are: (1) means and appliances used in veterinary first aid, (2) in actual first aid practice, (3) when the "alert" signal is given, (4) going into action, (5) in action, (6) clearing up. (DLC)

## PHARMACY

4587. A mobile pharmacy.  
WORLD'S CARRIERS (London)  
 1941, October 15, Vol. 38, No. 445, p. 13, illus.  
 A description is given of the Morris Commercial van, which has been approved by the Ministry of War, to serve as a mobile pharmacy in raid areas immediately following attack. Aside from facilities for sterilizing and disinfecting, it is equipped with a sink supplying ample water, a device furnishing hot water, and also with seats at the rear, for the treatment of light casualties. (DPR)
4588. Pharmacists in civilian defense.  
AMERICAN PHARMACEUTICAL ASSOCIATION. JOURNAL (Washington, D. C.)  
 1941 October, Vol. 11, No. 10, p. 391.  
 A proposed plan in the District of Columbia for emergency aid stations. Suitable locations, services to be rendered and special application requirements for pharmacists who desire to operate emergency aid stations are outlined in this fifteen-point plan. Arrangements are to be made at once for the plan to be put into operation. (DLC)
4589. War damage to pharmacies.  
THE PHARMACEUTICAL JOURNAL (London)  
 1941, July 5, Vol. 147, No. 4053, p. 13.  
 Southgate's mutual assistance scheme for members whose premises or stock have been damaged by enemy action. (DPAH)

PLAYS, See FICTION AND DRAMA

## POLICE

4590. Police in the war.  
JUSTICE OF THE PEACE (London)  
 1941, June 14, Vol. 105, No. 24, pp. 326-327.  
 The calmness, courage, and determination of the public during air raids has lightened the anxiety of the police. In the absence of rescue parties people have been dug out of ruined and wrecked homes; first aid has been applied when no ambulance service was at hand. Their police note books contain



## POLICE

information about the wartime functions of every organization, public office headquarters, and institutions. The Commissioner of the Metropolitan Police reports that during dangerous times, the public is content to await and obey instructions of the police. (DLC)

PORTABLE LIGHTS. See BLACKOUT - LIGHTING - PORTABLE LIGHTS.

## POSTAL SERVICE

4591. Air raid post offices delivered by motor-van.

THE MOTOR (London)

1941, August 13, Vol. 80, No. 2068, p. 22.

In case a London post office is severely damaged during an air raid, a fully equipped emergency post office will probably be found close to the site. These offices are portable, built in light, easily erected sections on steel tube frames. An entire building can be carried in a motor van, and can be erected and ready for business in about 20 minutes. The units are being housed at strategic points. (DLC)

## POSTERS

4592. The fine Arts Division of the Library of Congress has a large collection of posters referring to the War 1914-1918 and the immediate post war period. The War Collection, under the War Communications Research Division, contains posters covering the period of the Spanish Civil War; the Chinese-Japanese War (Chinese posters and photostats of posters up to 1941 incl) British, Canadian, French War Posters and American Defense Posters. The War Communications Research Division is preparing a descriptive catalog, and working on an analysis, of posters of the last and present wars. For information consult Dr. Harold D. Lasswell, the Chief of the Division or Dr. Harry J. Krould, both of the Library of Congress.

PRIVATE DWELLINGS, See DWELLINGS; PROTECTION OF

PRIVATE SHELTERS, See SHELTERS, PRIVATE

PSYCHOSIS. See MENTAL HEALTH

PUBLIC HEALTH. See HEALTH AND HYGIENE

PUBLIC ROADS AND BRIDGES

4593. Repairing two bomb-wrecked bridges.

Lee, Tuh-Fu.

THE STRUCTURAL ENGINEER (London)

1939, Vol. 17, pp. 185-190.

Two 40 ft. span steel girder bridges north of Canton were severely damaged during an air raid; the top of one pier had been blown off, and the steel-plate girders had suffered every kind of damage. Temporary bridges were erected and the wrecked spans were taken to a railway yard for repair. Repairs were complicated by the limitations of available materials, and it was found necessary to provide angles for the main flange by cutting up channels, using man-handled oxy-acetylene flame for the cutting. Web and cover plates were available only in 8 ft. or 10 ft. lengths so that the splicing was necessary. The bridges were taken to pieces and damaged parts cut off.

(Building Science Abstracts, 1939, No. 640) (DLC)

4594. Bomb damage and repairs on the Kan Sui Bridge, Canton-Kowloon Railway.

Gowlland, G. C.

ROYAL ENGINEERS JOURNAL (Chatham)

1939, March, Vol. 53, pp. 62-63.

The bridge was built in 1910, consisting of three spans of 100 feet. The abutments built on 12 in. by 12 in. timber piles and the piers on circular well curbs 26 ft. 6 in. in diameter were sunk to a depth of 60 ft. below low water level. A bomb hit the bridge on the south end of No. 1 pier about 4 ft. below the water line. The widest cracks were 9 in. wide and extended right through the pier. The north bearing plates of No. 1 and No. 2 spans were moved 9 in. out of line; there was also a horizontal crack right across the pier from below water level. Temporary repairs were made by erecting 40 verticle pieces of decauville rails (12 lb) and then binding them with rings of angle iron. Hard wood packing pieces were inserted under the rail bearers to distribute the load. Later, the cracks were filled with cement grout. The piers were originally brought up in "lifts"

## PUBLIC ROADS AND BRIDGES

of 4 ft. to 7 ft. and the cracks followed the joints, showing that the concrete was not bonded.

(Building Science Abstracts, 1939, No. 641) (DLC)

## PUBLIC UTILITIES

4595. ARP and the gas industry.

Mitchell, J.

GAS JOURNAL (London)

1938, Vol. 221, pp. 797-798.

It would appear possible to "blackout" a gas works satisfactorily, and the following method, owing to its simplicity and cheapness, is the most practical solution for air raids at night. Gas-holders and their surroundings are probably easily discernible from the air at very great heights by day and on moonlight nights; in such conditions the only concealment would seem to be by camouflage. Gas-holders should be painted grey and sufficient paint of other colors should be kept in stock to carry out a camouflage design on that background should need arise. As a precautionary measure all valves should be in working condition and gas-tight, so that in an emergency, different sections of the plant can be isolated. Where possible, sandbag partitions should be erected to screen or cover vital places or equipment, such as boilers, steam pipe lines, exhausts, etc. Protection should be arranged for personnel on duty and training in air raid precautions should be given, including precautions to be taken for the plant itself, and knowledge of the position of specially important valves, apparatus, and duplicate equipment.

(Building Science Abstracts, 1938, No. 1046) (DLC)

4596. Gas holders and protection from air attack.

Hay, H.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1936, Vol. 6, pp. 89-91.

Damage to "wet" gasometers would probably result in the gas burning out without doing much harm. A hit on a "dry" or "high pressure" gasometer would probably cause an explosion. Precautions are discussed.

(Building Science Abstracts, 1937, No. 1472) (DLC)



## PUBLIC UTILITIES

4597. The repair of damage to gas mains.

Bohm, J.

DAS GAS UND WASSERFACH (Munich)

1940, Vol. 83, pp. 537-539.

Gas mains, including town low-pressure supply systems for industrial purposes, may suffer damage from corrosion or enemy action and measures for repair are reviewed. The plugging of small holes, the "patching" of larger holes by plates welded to the pipe or held in position by screwed clamps, etc., the removal of badly damaged sections and the coupling of new lengths, etc. are described and illustrated. Consideration is given also to the method of extinguishing fires in gas mains and to protective appliances for firemen.

(Building Science Abstracts, 1941, No. 238) (DLC)

4598. Structural precautions.

INDIAN ENGINEERING (Manchester)

1938, April, Vol. 103, No. 4, pp. 110-111.

Municipal engineers are particularly concerned with the effect of air action on water mains, sewers, and light and power conduits. Protection against armour piercing bombs can be obtained by providing a layer of 15 feet of concrete or earth. Experiments show this will protect against splinter penetration of 500 lb. bombs 50 feet from point of explosion. The incendiary bomb is smaller, varying from  $2\frac{1}{2}$  to 60 lb. (DLC)

## RAID SPOTTERS

4599. Night and fire spotting.

Chiccester, Francis

1941, London, Allen and Unwin. Pp. 68.

The author attempts to establish a set of safety rules for the bombed. Contents. - Definition of a skillful spotter. Value of night spotting for everybody. Value for fire-fighters. Value to factories of spotting. The psychological value of spotting. Practical life-saving value of factory-spotting. Claim that spotters cannot give sufficient warning. The siren. Searchlights. Gunfire and shellbursts. The sound made by aircraft. "Jinking". Local conditions. Behavior of an aeroplane. Behavior of a bomber. Bombing targets near prominent landmarks. Becoming bomb

## RAID SPOTTERS

expectant. Random bombing. Gun flashes. Can the bomber find a city in fog or cloud? Bombing by wireless. Length of bomb-danger period. The forward travel of a bomb. Trail angle and trail distance. Trail distance of incendiaries. Speed with which an H. E. bomb approaches the ground. Sound is slow. How to find the speed of an aircraft. The triangle at night. Possible accuracy of sound judging. Weakness of human hearing system. Judging distance. Height of a shell burst. Noise of falling bombs. Dive bombing at night. Glide-bombing. Shell fragments. Spotting and fire-fighters. Fire fighting and incendiaries. Dependence on the observer corps for factory alarms. (DLC)

4600. Sluzhba vnutrennego nabludeniia i razvedki punkta PVO (Points of interior observation and reconnaissance of the ARP unit) Linnik, A.  
 KHIMIYA I OBORONA (Moscow)  
 1932, No. 5-6, pp. 16-18.

A description of the tasks and organization of interior observation and reconnaissance units which provide the necessary knowledge for the men in charge of the ARP units. The tasks of the observation and reconnaissance units are (1) observation of aerial activity, (2) ascertaining the whereabouts and character of damage as a result of enemy aerial activity, (3) ascertaining other damage or difficulties that can arise as a result of air-raids, (4) sounding of gas alarms. Each observation and reconnaissance unit will consist of observers, persons carrying out reconnaissance, and liaison officers. The unit is in charge of a chief and covers a certain area of observation. The tasks of each member of the unit are described in detail. (DLC)

## REFRIGERATION

4601. Coldspot ARP refrigerator.  
 ELECTRICAL TRADING AND RADIO MARKETING (London)  
 1939, November, Vol. 11, No. 121, p. 61.

A "Coldspot" refrigerator designed especially for hospitals, ARP centers, air force, military depots, and hotels, provides four days reserve storage in event of failure of electric power. There are two models. ARP 6 and ARP 8, with capacities of 6 and 8 cubic feet respectively. (DLC)

## REFRIGERATION

4602. Refrigeration in wartime.

Morrison, C. B.

REFRIGERATION ENGINEERING (New York)

1941, June-July, Vol. 21, No. 6, Vol. 42; No. 1, pp. 22-24, 60, 401.-403, 450.

In two parts: Pt. 1 - Observations made in Europe and the Orient during the past twenty years. Part 11 - England under the air raids. Under the first heading are discussed the business and labor problems of the refrigeration industry. Part 11 consists of a reportorial account of life in London during the air attack. (DLC)

REGULATIONS, See LAWS AND REGULATIONS.

## REPORTAGE - GREAT BRITAIN

4603. Carry on London.

Calder, Ritchie.

1941, London, English University Press. Pp. 163, illus.

The account of a "Front Line" observer of the "Battle of London" which exposes faults and suggests their remedies. "Against the background of the situation created through the 'blitz'", the book deals "with the merits of many wartime civilian services and with the way in which we have, or can, or must, turn the lesson we have learned from the mistakes to enduring good." (DLC)

4604. Country notes in wartime.

Sackville-West, Victoria M.

1941, New York, Doubleday, Doran. Pp. 85.

A group of informal essays. The book's chief interest from the point of view of ARP is the discussion of the difficulties of farming under blackout conditions. (DLC)

4605. How to get by in wartime.

Campbell, Ethyle.

1940, London, Peter Davies. Pp. 193.

Treats in an informal style some of the personal problems created for women by war conditions. Clothing, food, personal finance and participation in war effort are some of the subjects covered. There are many incidental references to the effect of ARP on the familiar aspects of daily life. (DLC)



## REPORTAGE - GREAT BRITAIN

4606. I saw England  
Robertson, Ben

1941, New York, Alfred Knopf. Pp. 213.

PM's London correspondent reports his day to day experiences in London during the period of severest air raids. The final impression left by the book is that of the good morale and determination of the British people. (DLC)

4607. Mansion House of liberty  
Bottome, Phyllis.

1941. Boston. Little, Brown. Pp. 264.

Observations and personal experiences of the author upon returning home to bombed England after a visit to the U.S.A. Chapters of special interest in relation to ARP are: chapter 3, "The front doorstep of England", dealing with Liverpool; chapters 6 and 7, dealing with London; chapter 8, "The cockpit of England", dealing with Dover; chapter 10, "The ploughshare into the sword", reporting visits to industrial plants; chapter 11, "The women of Britain", and chapter 13, "Angels unawares", dealing with evacuated children. Chapter 14, "Letters from London and danger zone", gives extracts from letters written to the author by various relatives. (DLC)

4608. Post D; some experiences of an air raid warden.  
Strachey, John.

1941, London, Victor Gollancz. Pp. 135.

"The reader will be disappointed if he seeks for a record of heroic deeds or thrilling escapes in these pages. Many people undoubtedly did courageous things in the course of the bombing of London, and other cities, during the autumn of 1940. But, as it happens I never had the good fortune to witness any deeds of individual heroism.... It may be, however, that just because of this the description here attempted will be found to be, on the whole, representative of what many Air Raid Wardens, and other Civil Defense workers saw and heard during this period." (DLC)

4609. Report on England: November 1940.  
Ingersoll, Robert M.

1940, New York, Simon and Schuster. Pp. 202.

"Ralph Ingersoll went to England in October, a month after

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Hitler's air blitzkrieg on the British Isles had passed its peak. He stayed there barely two weeks, spending all his time in and near London....Immediately upon his return to America he described what he had seen in a series of articles that appeared in his own paper, PM, and in other newspapers throughout the country. This book reproduces those articles." (DLC)

4610. Their finest hour; first hand narratives of the war in England.  
Michie, Alan A. and Graebner, Walter, eds.

1941, New York, Harcourt Brace. Pp. 226, illus.

With the permission of the British Ministry of Information, the London correspondents of Life interviewed a B.E.F. sergeant just back from Dunkirk, and R. A. F. squadron leader, who helped make that retreat possible, a flight sergeant who bombed the Ruhr, two seamen who survived the torpedoing of an armed merchant cruiser, a volunteer fireman who fought incendiaries on the London docks. First person accounts of their experiences, and those of others, are given in such chapters as "Our house was bombed", "Fire over London", "Front-line girl", "Coventry doctor", "London stands up to the blitzkrieg." (DLC)

4611. They'll never quit.  
Klemmer, Harvey.

1941, New York, Wilfred Funk. Pp. 321.

Chapters 1 and 2 describe the German air attack on London beginning September 7, 1940. Chapter 3 compares the damage done to military and non-military objectives; chapter 4 describes the work of the spotters, the balloon barrages, and the anti-aircraft guns. The next two chapters are devoted to the R.A.F; and those following report on the chief phases of organized passive defense (dispersal, blackout, camouflage raid warnings, shelters, fire fighting) on the work of the bomb disposal squads, on London shelter life, and on the work of the rescue squads. Chapter 11 "To 'ell with Hitler" recounts anecdotes illustrating the fine morale of the people. Chapters 12 through 15 give vivid examples of what happens when a high explosive bomb makes a direct hit, describe conditions in some of the London suburban centers, and "County Life" under the blitz. Chapter 16, "The 8:32 to Victoria", reveals the results of air attack along the rail-way line; chapter 17, "Murder in the

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blackout", is an account of personal experiences during a night attack; and chapter 18, "American outpost" deals with Americans caught in England at war. The remaining chapters treat miscellaneous military and political aspects of the war. (DLC)

4612. Voice from England.

Westerby, Robert.

1940, New York, Duell, Sloan and Pierce. Pp. 156.

A series of letters in which a young Englishman, later to become a soldier, recounts his thoughts, experiences, and emotional reactions to the war. Most of the book is devoted to political, social and moral questions, but letter 111 gives intimate glimpses of a reception area village at the time of the first evacuation, and letter V reveals something of the casual inefficiency of the early attempts at ARP organization and training. (DLC)

4613. War letters from Britain.

Forbes-Robertson, Diana and Straus, Roger W., eds.

1941, New York, Putnam's. Pp. 240.

"The letters assembled in this book give an idea of the indomitable spirit which sustains them (the British). The editors have tried to choose letters representative of many types and classes, written at all stages of the war since its relatively inactive early phases." (DLC)

4614. A woman faces the war.

Drummond, Ruth.

1940, New York, H. C. Kinsey. Pp. 183.

The experiences of an English housewife recorded in a series of letters dated from September 4, 1939, to April 21, 1940. Glimpses of the daily home life of a mother and five children. (DLC)

4615. Women of Britain; letters from England.

Maxtone Graham, Mrs. Joyce, comp.

1941, New York, Harcourt Brace. Pp. 334.

Because disturbances in the home life of a nation affect women especially, the editors have gathered letters from women in this book, and, instead of printing only passages directly bearing on the war, they have printed the letters in full. This "was the only way of giving the reader a fair



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and well balanced picture of what life in Great Britain is like at the present time - the only way to get the ordinariness and extra ordinariness of it all in true proportion." Certain themes recur throughout the series of letters: the disruption of family life, the effect of the war upon children, changes in dietetic habit, love of music, the presence of foreign refugees. There are many references to the United States. (DLC)

## RESCUE SQUADS.

4616. New device locates buried persons.

THE ILLUSTRATED CARPENTER AND BUILDER (London)  
1941, August 1, Vol. 129, No. 3337, p. 132.

A new invention, an electrical sound detection device, may soon be used by rescue parties to locate the exact place of buried air raid casualties by their breathing. The electrical sound detection apparatus was recently demonstrated to Sheffield ARP. Further tests are to be made. (DLC)

## RESEARCH

4617. Civil defense research.

THE FOUNDRY TRADE JOURNAL (London)  
1939, May 25, Vol. 60, No. 1188, p. 416.

"A special committee to advise on the formulation and execution of further programs of research and experiment in connection with the problems of civil defense" has been appointed by Sir John Anderson. The research work now being carried on under the ARP department "includes extensive experiments on earth waves resulting from explosion, the physiological effects of blast, zig-zagging of trenches or entrances to shelters, the value of buildings in shielding other buildings." The National Physical Laboratory is advising on lighting, warning signals and steel helmets. (DLC)

RESPIRATORS. See GAS PRECAUTIONS

REST CENTERS. See WAR RELIEF

## SANDBAGGING.

## 4618. Defense against ARP.

THE ARCHITECT AND BUILDING NEWS (London)

1939, November, Vol. 160, No. 3698, pp. 106-108.

The rush to provide immediate protection against air raids resulted in the use of sandbags. Now the publicity given to the rotting of sandbags is belated but necessary. Equivalent protection could, in many instances, have been provided by brickwork, at half the cost of bagging, and with the certainty that once done it would need no further attention. Repair: When the damage is done, it must be repaired, and the question is-- how? The problems can be treated under three heads: (A) replacement, (B) half measures to prevent damage to bags themselves, (C) measures to prevent damage to buildings. A. Replacement: The chief points to watch are: (1) drainage, (2) rot-proofing, (3) vermin-proofing, (4) filling, (5) stacking, (6) weather-proofing. Drainage may be obtained by raising the lower bags on planks or by laying the bags on a foundation layer of sand or coke (not earth). Rot-proofing: it is essential that the bags be proofed before filling. Vermin-proofing: the rot-proofing processes are in most cases discouraging to vermin. Filling: if the bags are only three quarters filled, room is left for expansion. Stacking: good stacking depends on bonding, beating down, and the provision for drainage. Weather proofing: this problem is linked with suggestions in the previous paragraphs and depends on the amount of money and material available. B. Half measures: where bags are still in good condition to be patched they may be sprayed or painted with tar, bitumen etc., or slurred with cement. (DLC)

## 4619. Preservation of sandbags.

ENGLISH MECHANICS (London)

1939, November 24, Vol. 27, No. 683, P. 103, illus.

The necessity of preserving the material of the sandbags against rotting and attacks by insects caused various methods of protection to be adopted such as: painting over with a thin cement "grout", tar, creosote, and similar water-proofing solution, preferably those with a disinfecting action for avoiding the attacks of insects. Inefficient sand bagging, unsuitable bags filled with rough material, unscientifically stacked walls, and bulging and warping as a result of false stresses; also lack of drainage and protective substance, give justification for fear of the collapse of some stacks of sandbags. Enclosing sandbags in

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creosoted wooden "hutches" or slabs of reinforced concrete are additional precautions approved by the authorities and used by large firms able to spend a great deal of money on efficient defenses. (DLC)

## 4620. Stronger sandbags.

ENGLISH MECHANICS (London)

1940, March 15, Vol. 27, No. 699, p. 361.

The following methods of treating sandbags are suggested: (1) dress the bags down with tar, which should be allowed to harden before filling the bags with sand, (2) When the bags are in position, go over them with a good flowing coat of liquid cement. Repeat if necessary. (DLC)

## 4621. The use of sandbags.

INDIAN ENGINEERING (London)

1939, November, Vol. 105-106, No. 5, p. 140.

Sandbags used scientifically protect adequately some types of homes. In order to secure protection, sandbags should be laid so that the tie mouth is lifted outwards while the seams hang inwards; moreover when the bags are placed against walls in a pile thicker at the bottom than the top they give greater degree of protection against falling bombs. Sandbag protection serves as a substitute for timber and concrete. To protect the bags from damp and wet weather, waterproof material is being used. (DLC)

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4622. Arbeitszeit der Jugendlichen bei Ausfall des Berufsschulunterrichts wegen Fliegeralarm (Loss of working periods of children from school instruction on account of air raid alarms.)

Mansfeld.

ARBEITSSCHUTZ - UNFALLVERHÜTUNG - GEWERBEHYGIENE (Berlin)

1940, November 15, No. 11, p. 282.

In some localities in order that school children may get the necessary amount of rest, the opening hour for school varies from 8 to 10 o'clock, depending upon the extent of bombing the previous night. The supervisors of a particular locality must make regulations governing this emergency in accordance with laws set up by the school board. They must provide for (1) length of time to be



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spent in school, (2) amount of work to be covered (3) arrangements for those with minor injuries. (DSG)

4623. Bauliche Luftschutzmassnahmen in Schulen. (Structural ARP measures in schools).

Frommhold, Hans.

LUFTFAHRT UND SCHULE (Berlin)

1940, October, Vol. 6, No. 1, pp. 5-9.

The planning of future schools - to be built away from other buildings - fits into the scheme worked out by city planners and experts in air raid construction. These schools should be constructed to provide air raid shelters for the pupils, and, in addition, should be adaptable for use as hospitals, as refuges, or convertible to peacetime needs. It is recommended, if space permits, that ARP rescue stations be built next to the shelters. These can later be converted into showers or locker rooms. This is only planned for new buildings, old buildings will have to be used to the best possible advantage. Protection against dynamite and fire bombs. Ordinary living and business quarters as well as industrial buildings, do not in the future have to be equipped for protection against hits. However special protection against near hits must be provided, especially in crowded areas. Since most schools undoubtedly are of the older type, reconditioning for the emergency use can be done in an economical manner by already proven methods. To make the buildings as impregnable as possible, "skeleton" building methods are recommended. This does not mean however that the skeleton construction eliminates the "filled-in wall constructions." The former finds its place in buildings with many stories, while the latter is meant for smaller houses. Incendiary bomb hazards can be reduced by many methods. The first step is the elimination of rubbish. Cellular fire walls should be erected. It is of great importance to have the ceiling of the top floor secured against the penetration of incendiary bombs, fire and water. Such a process will save a building even in case the woodwork of the roof burns. Where it is not practicable to replace the wooden beam ceiling with a new construction, a plaster application or brickwork on the existing ceilings will give additional safety. The attic has to be unencumbered and must be easily accessible. It is recommended that attics should not be enlarged. Boarded partitions must be so constructed that they are easily removable. If there is any woodwork in the roof, vacuums

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have to be avoided. In addition it is well to saturate the wood work with a solution which impedes fire. The best way is to avoid wood work in the roof altogether. Attics which are especially constructed to resist fire serve the purpose of fire prevention in general. Next to "iron beton covers" other massive construction material is rapidly becoming popular, because of the nominal cost and because of the raw material question. Other construction features are designed to prevent the penetration of incendiary bombs into the attic, while the outside is covered by special iron beton covers. In the other storeys no additional preparations are necessary, except for the regular peace-time precaution as doors opening to the outside, fire extinguishers, etc.

Blackout measures. Schools have been criticized for their too complete blackout system but it must be remembered that in an emergency the schools must be used at all hours of the night as well. There are many methods which are used for blackout provisions; however the two main groups which can be used in combination are the light technical and the mechanical method. The light technical blackout shades the light sources, like electrical bulbs or the bulbs of gas lights, also all devices which constitute a unity with light sources. The mechanical blackout prevents the escape of any light through all openings such as doors, windows, glass roofs etc. Which one of these methods is to be used depends on the use to which the room is put. Schoolrooms, which have to have full light when in use, will apply the mechanical blackout, while places which need little light, like corridors, staircases etc., may use either one.

Recommended reading "Durchföhrung der Verdunklung" by Knothe (Execution of the blackout). "Die wichtigsten Luftschutzgebote und ihre Erläuterungen" (The most important ARP commands and their explanations) from Gasschutz und Luftschutz KG, Berlin, 1939). "Die Verdunklung" (The blackout by Frommhold, Bauwelt Verlag, Berlin, 1940) In these places it is permissible to use blackout materials which let a little bit of light through, without allowing light to escape to the outside. From the many blackout devices, here are just a few: (1) Venetian blinds, which can be made safe for blackout by a simple device, (2) draperies of soft material which does not let any light through. They must have pulleys and will prevent any light from escaping either at the side or at the bottom even in case of a draft or false movement, (3) venetian blinds made of paper, fabric, oil cloth, wood-wire fabrics, or artificial texture, (4) plated draperies made of paper, (5) blackout blinds, made of special blackout paper, cardboard or plates of artificial texture, which are placed directly over window and door



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frames, (6) blackout insertions; (covered frames and are put into window niches) (DLC)

4624. Bemerkungen zu den neuen Richtlinien ueber den Luftschutz in Schulen und Hochschulen (Remarks on the instructions about air raid protection in schools and colleges)  
Hardenberg.

LUFTFAHRT UND SCHULE (Berlin)

1941, February, Vol. 6, No. 5, pp. 52-53.

Schools in general belong in the enlarged 'self protection plan', which includes not only state, community and private schools, but also technical schools, high schools, and institutes. Excluded are only very large institutions such as laboratories and machine warehouses which constitute an industry in themselves, subject to Industrial Air Raid Protection. Schools in small communities come under the 'enlarged self protection plan' but the local air raid precaution leader, in conjunction with the school principal, decides under which phase of the Air Raid Precaution plan the particular school falls. The status also depends on whether the school is in an Air Raid Protection Area 1. Not a single school in Germany is exempt from the Air Raid Precautions plan. All schools are required to have especially through training for the members of their Air Raid Protection Services, which is furnished free of charge by the RLB (Reichsluftschutzbund). These courses will mostly consist of fire fighting and first aid. This training alone, is not sufficient and frequent drills are recommended in the schools, at unexpected hours, so that the pupils can participate. In addition to the practical drills, a decree of October 30, 1939, by the Minister of Education calls for theoretical classes for the pupils to study the many dangers of air attacks, how to combat them, and what precautionary measures to take. This procedure will also train teachers and pupils who do not actually belong to the emergency squads, but who can join them whenever necessary. The division of the Enlarged Self Protection into "Local Coordinator of Air Raid Protection", "stocktroops", and "Readiness troops" is also applicable to the school system. All schools built after the decree of May 4, 1937 (R. Ges Bl. 18568) on "Laws on Shelter Conditions" will have adequate bombproof shelters. Schools erected before this time are required to construct shelters according to the 9th execution of the Air Raid Protection



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Law of August 17, 1939 (R. Ges Bl. 1. S1391). If the cellar of the school is not large enough, auxiliary trenches in the immediate vicinity of the building, must be provided. At all times the maximum number of people belonging to the particular shelters must be considered, so there will be neither overcrowding nor any waste of space or material. To this end, the decrees of December 8, 1939, and of April 16, 1940, of the Minister of Air may be consulted at all local Air Raid Protection Centers of the RLB (Reichsluftschutzbund). Schools with insufficient shelter facilities, if located near important targets, may be closed. The pupils may be distributed to different schools, and the classes may be held in shifts. All the inconveniences and difficulties of such measures must be overcome in one way or another as part of the hardships of war. The closing of schools, however, will only be ordered if air attacks occur frequently during school hours and during the time the children come to school. It at all possible it is preferable to construct adequate shelters, in order to avoid any interruption to the school term. In many cases the enforcement of the Readiness Service has resulted in a severe strain on the teachers and the older pupils, especially in schools where there are mostly younger children and a small staff. It has therefore been found necessary to reduce the number of the Readiness troops to 3 or 4 persons per building, and to dispense with them entirely during the night and on holidays, if a sufficient number of "Stock troops" actually live in the building or nearby. At all times, however, a sufficient number of eligible people must be on the spot in case of emergency. To avoid overstrain certain limitations have been put on service. Teachers and pupils over 18 years of age serve three times monthly and must have a rest period of 6 hours afterwards if they have been called on for help entailing physical strain. Female teachers or pupils over 16 years of age may be on the Readiness Service twice a month and are to have a rest period of 8 hours, or 10 hours in cases of especially strenuous work. Exempt from the Readiness Service are all pupils under 16 as well as female teachers who care for children under 3. Female teachers and children under 14 may be put into the Readiness Service only if the children in their care are under adequate supervision. (DLC)

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4625. Was Hilfsschulkinder aus dem Luftschutzfilm "Dachstuhlbrandbekämpfung" gelernt haben. (What auxiliary school children learned from the film on air raid protection "Fire fighting in roof framework")

Hennecke, Friedrich.

LUFTEFAHRT UND SCHULE (Berlin)

1940, March, Vol. 5, No. 6, p. 63.

We auxiliary school teachers know, from long experience, that slides and moving pictures offer the most important object lessons of the auxiliary school. In addition to making the study true to life, they activate the children and train them for community life. Our task is to inculcate in school children the obligations of the present as well as the future; so that they can cooperate in actual practice, in order to be of great service to themselves and to the community. Moving pictures serve this purpose. We must use them because we cannot always create facts. What is the proper and successful way to fight a fire in the roof framework, caused by enemy incendiary bombs? This question came up for discussion in an air raid precautions class. The children had already heard about incendiaries and possible ways of fighting them. They were next asked the following questions: "Who has already seen a fire in a roof framework?" (Very few children raised their hands) "Who put out the fire?" (All of them were able to give the answer - the fire brigade) "How was the fire put out?" (No answer). The children were then shown the ARP moving picture put out by the RLB (Reichs Luftschutz Bund. The showing and evaluation of the picture took up several hours. The keenly observant children were tired after a slow showing, which lasted about an hour and then were given a long recess (20 minutes). Thus refreshed, they were in a better frame of mind to discuss what they had retained, what particularly impressed them, what they had perhaps not understood etc. The film was divided into the following phases: (1) The appearance of the smoke of these roof framework fires. (2) The flaming framework of the roof and its consequences. (3) How to protect the adjacent roofs. (4) Who put out the fire. (5) How it was extinguished and how other dangers were met. The children learned the following from this film: (1) The fire in the roof framework must be fought, so that the entire house will not be lost. (2) The roofs of the adjacent houses must

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be well saturated with water so that they do not ignite and cause even further damage. (3) All embers hidden beneath rubbish, etc. are to be put out. (4) All sections of the ARP unit must cooperate. (5) Not only the regular firemen can extinguish the fire, but the house fire squad must be in a position to fight these roof fires as well. (6) Women are likewise qualified for the house fire squad. This is especially demonstrated to girls, so that later they will volunteer for such duty. It is not exaggerated to say that through the moving picture in the classes, the nearness of the subject to life has been proven. The pupils' activity has immediately been challenged by the film. "Let's fight a fire sometime". "Let's try on a gas mask again". "I have got to inspect our attic again to see if it still is properly cleared". Such exclamations indicate that the showing of a vitally interesting film of contemporary events will motivate such keen interest as to result in action. That such a film will educate the children for community life is indicated by the following remarks: "I will later join the house fire squad". "I want to become a fireman". "I would help my neighbor if his house burns". There is an old pedagogical saying "we do not learn for the school but for life" and we aim to also adopt this for ARP film classes. "Help yourself and others at the same time in times of dangers". This will be our motto in the future for similar discussions. If we let our auxiliary school children have experiences of this kind, how to help, whom to help, why they should help, then we are stimulating in them active community spirit (Volksgemeinschaft). This is our highest command. (DLC)

4626. Hilfsschulkinder werden im Feuerlöschdienst Ausgebildet (The training of auxiliary school children in fire extinguishing) Hennecke, Friedrich  
 LUFTFAHRT UND SCHULE (Berlin)  
 1940, July Vol. V, No. 10, p. 103.

Since 1938 we have been training the boys in our auxiliary schools in fire extinction. By means of this practical education, we want to equip them to lessen, thru vigorous action, the danger produced by incendiary bombs. We use, for this training, all the vessels available to the action group of the Fire Extinguishers' Brigade in our schools: tamper, hand sprays, (water can spray), hose hydrant wrench and gasmasks. (Nota: No. 7, 1940, of this publication



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describes in detail the training of auxiliary school children in the use of the gas mask). The enthusiasm of our youth is such that they would love to practise daily. After Easter promotions, they had hardly attended the highest auxiliary school class for a few days before they inquired daily about their training in fire-extinguishing. While they were on-lookers at the beginning of the year, they liked this work so much that they could hardly wait. This enthusiasm enables our auxiliary school children to readily master their exercises. What do they learn in this training? They next are taught the use of individual vessels. Tampers, which we ourselves made, are shown and their use discussed. Then they learn about the handsprays, their filling with water and the attachment of the hose. As we proceed with their training, we inspected the inscription on the fire plugs, and explained their symbols and numbers - then we showed them how to take off the hydrant cover, how to open the valve, how to insert the hose, how to insert the hydrant wrench, attach the hose and turn the water on. The children should practice these exercises one at a time. Then we take up fire fighting. Naturally we do not practise with the inflammable substances on the floor but in the yard. The first exercise consists in putting out an ignited substance - we use the well known small Mox - Brikett - with the wet tamper. The children learn in actual practise how easily and relatively quickly such a fire (such as is caused by sparks from incendiaries) may be extinguished by means of the wet tamper. Of course we caution the children that bigger incendiary bombs may have to be treated in a different way. We went through with this experiment however, in order to make the children unafraid of fire. After they saw that the experienced teacher was unhurt while tamping close to the origin of the fire, they lost their first feeling of fear and courageously set to work. No one wanted to be left out. Each one will have tamped out such a fire before long. The next exercise is putting out the fire with a hand squirt. This exercise is also practised with a small amount of inflammable matter. In spite of this, every precaution is taken, as prescribed in "Richtlinien für die Brandbekämpfung im Luftschutz" (See "Luftfahrt und Schule", 5 year, Vol. 6, p. 64) when fighting real incendiary bombs. Two boys carry the full hand squirt near the fire, a third, protected by some sort of covering, crawls to the fire and extinguishes it, while the other two take turns serving the hand squirt. A fourth and fifth boy bring up buckets

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full of water. This type of fire extinguishing is also to be practiced again and again, each child doing a different job (carrying, pumping, putting out, fetching water) so that each child has done everything once. Do not forget to tie a rope around the boy who is putting the fire out. We do this so that this rope, which reaches the stairway, is a rescue line in actual firefighting, in case he feels ill, when he is overcome by smoke, etc. After these exercises are finished, the children learn to handle the fire hose properly and how to manage hydrants (take off the cover, insert the hose, open the hose and hydrant). At the command "Water-march" everyone is at his post and can proceed with the fire extinguishing. Under these circumstances naturally the fire fighting is more effective and is more quickly accomplished through the more powerful stream of water. In order to fight a fire in the attic the hose must be drawn up to the top floor. The children practice this also in their training for fire extinguishing. All these exercises are practised without gas masks. We do not start using the masks until it is certain that each auxiliary school child is absolutely trustworthy in each of these details. In a very short while we trust the children with them so that they can perform satisfactorily all the exercises in fire fighting with gas masks on. There is great activity in the school yard when we begin these fire extinguishing exercises. Commands are heard, every youngster awaits the assignment, eyes sparkle happily, and the orders are promptly carried out. When the flame bursts forth, when it hisses and crackles and sparks are scattered around, then the fire fighting proceeds by means of tampers, hand squirts or hose. Our auxiliary school children close in on the fire with courage and determination, then report happily that the command has been carried out. In this manner we teach our children to take a practical part in community life by helping others. When possible, children in the last years of high school should not miss this training. The results of this training will be reflected in the future benefit to all house dwellers in time of danger. (DLC)

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4627. Air raid shelters and the effect of bombs in Spain.  
BAUWELT (Berlin)  
 1937, Vol. 28, pp. 1128-1129.

Experience in Spain has shown that the greatest danger to



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the occupants of shelters in buildings has been the blocking of exits by falling debris, where emergency exits were too few or unsuitably situated. Bombs striking 4 to 6 story buildings may penetrate all floors to the basement and underground railway stations are not safe from explosive bombs. Direct hits on buildings are however, exceptional and shelters are seldom hit. It is sufficient therefore, to protect shelters from bombs falling in their vicinity. Some buildings have shown unexpectedly good resistance to splinter and blast effects. Open and covered dugouts in open country have been found to give very good protection; shelters in caves have given most protection. Expertly designed shelters have fulfilled all expectations. Easy access to shelters is of great importance. The atmosphere of a shelter deteriorates much more rapidly than is indicated by theoretical calculations. Not only must the reduction in the oxygen content of the air be taken into account, but also the supersaturation of the air with moisture and the presence of disagreeable odors. Shelters with artificial ventilation proved very satisfactory. Shelters should not be located near petrol tanks, heating plant, water mains, etc. Overflow of waste pipes and the flooding of shelters has frequently occurred.

(Building Science Abstracts, 1938, No. 1054) (DLC)

4628. The function of plaster in structural air raid protection.

Maune, F.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1939, April, Vol. 8, pp. 45-46.

According to the regulations for protection from air attack, a massive floor serving as the roof of a shelter can be rendered gasproof by the application of plaster in the usual thickness to the lower surface. The author points to the need for ensuring good adhesions of the plaster, so that, even if the floor is exposed to bending by falling debris, the plaster will not be dislodged and will show only the minimum of cracks. A good, securely nailed background for the plaster is essential and, to prevent cracking, hay, hair, or straw should be added. Calcium sulphate plaster or lime gypsum plaster is suitable. The plaster should be allowed to dry naturally, but if it is to be artificially dried by heating, special care must be taken to avoid too great heat at the beginning which may cause cracking, and to allow sufficient ventilation. Plaster used as fireproofing for steel supports



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gave very good results in fire tests. Kristen found also that lime mortar containing 10 per cent gypsum is especially resistant to the action of fire. The value of plaster as fire-proofer is increased by the use of a suitable backing material, such as wire coated with baked clay, and the addition of hair or a suitable heat resistant substitute.

(Building Science Abstracts, 1938, No. 1061) (DLC)

4629. Health regulations for air raid shelters.

THE MEDICAL OFFICER (London)

1941, January 11, Vol. 65, No. 2, p. 15.

In order to safeguard the health of the shelterer and preserve good order in the public shelters, the following regulations are enforced: the exclusion of persons suffering from contagious diseases, persons whose clothes are offensive, unclean, or verminous, and persons who are drunk. No one may take into a shelter any loaded fire arm, dangerous, or offensive article, any apparatus for heating or cooking, any bird or animal, any perambulator or other vehicle. (DSG)

4630. "Introduction to ARP"; a lecture.

Rosenauer, Michael.

1940, November 25, New York, New School for Social Research. Pp. 8

Under "Types of bomb attacks", the author describes gas, incendiary, and high explosive bombs. The three types of high explosive bombs explained; these being the "light case", "medium case", and "heavy case" bombs. Under "Types of shelters" a broad classification of shelters into two principal groups is indicated, "one group which resists blast and splinter effect of bombs but does not protect against direct hits of explosives within a radius of 50 feet; the other group which resists all effects including direct hits." Specific types described are the trench, the Anderson, shelters inside existing buildings, blast, and splinter proof public shelters, bomb proof shelters. Brief comments on the protection of government buildings, factories, and hospitals and on evacuation. (DLC)

4631. Metal air raid shelter with compressed air supply. Andremaignot system.

LE GENIE CIVIL (Paris)

1937, Vol. 110. p. 55.

A shelter built on the Andremaignot system is a welded

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steel shell, placed above or below ground and covered with concrete to withstand the effect of detonation. A slight excess air pressure is maintained in the shelter and in the gas lock, from which air is evacuated directly to the exterior. The air is distributed in the form of fine jets to avoid draughts and eddies, and is evacuated by two circuits - an upper circuit for damp, warm air and a lower for cold air. The air outlets have two check valves, so that the pressure between the valves ensures that the inside valve is closed, should contaminated air enter by the outer valve. The outside door of the gas lock can be opened from within the shelter. The closure of the gas lock doors is in the form of an air chamber which is filled with air automatically on bolting the door, and which is protected by a strip of plastic material and metal. (Building Science Abstracts, 1938, No. 425) (DLC)

4632. The modern troglodyte.

THE MEDICAL OFFICER (London)

1941, April 19, Vol. 65, No. 16, p. 129.

The problems of the ARP in relation to shelter health and the shelters are many, for after the "blitz" even though many saved their lives by staying at home and using some domestic protection, the demands on the Government to provide deep bombproof shelters had to be met by the local authorities. After a conference with experts, shelter protection was made by strutting basements, building communal shelters, trenches, making shelters in new buildings compulsory, and constructing shelters for persons caught in the street. With the completion and use of the various shelters, overcrowding and lack of sanitation created a risk to the health of the shelterers, which again had to be met by the local authorities. Sanitary arrangements and regular cleansing were introduced; safe earth floors were concreted, ventilation and lighting were improved; in all, minimal standards were introduced and gradually improved as time, necessary personnel and material allowed. (DLC)

4633. Provision of air raid shelter in specified areas.

Great Britain. Air Raid Precautions Department.

1940, March 4, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 4d. 10¢)



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4634. Skhovishcha vid povitrianih napadiv (Air raid shelters)

Mel'nik O. O. and Brovarnik, M. L.

ARKHITEKTURA RADIANS'KOI UKRAINY (Kiev, U.S.S.R.)

1939, October, No. 10, pp. 22-24, drawings, photos.

Shelters offer the best possible escape from air raid attacks. Tunnel shelters should have strong protective roofing of at least three layers: (a) the detonation slab on top. (b) the shock absorbing layer in the middle, and (c) the inner casing which serves as a supporting base for the above specified layers. Hermetically sealed doors and windows must be installed. Showers, first aid station, filter and ventilating system, heating, lighting and telephone service must form a part of any shelter planning. Small basement shelters provided with air locks must also be considered. A gas-tight room may be installed inside one's house. It should be located below the third floor and not in a basement. Gas-tight rooms should be installed near elevators or stairways. Portable pill boxes of compressed steel are also in many places as shelters. (DLC)

4635. State of public shelters in large cities.BRITISH MEDICAL JOURNAL (London)

1941, September 27, Vol. 1, No. 4212, pp. 451-53.

The shelter situation in the various large cities in Britain is discussed as follows: Bristol - has 1,150 shelters including communal and surface. The city is divided into five sections for ARP purposes. Most of the shelters are in good condition and are staffed by a shelter marshal and nurses. Cardiff - groups of 10 to 20 shelters, each shelter being over 30 ft. long with roofs, walls, floors of solid monolithic construction and a layer of concrete skin on the foundation. Each shelter contains 48 bunks in two tiers. The most sanitary conditions are kept. Birmingham - small basement shelters, a few surface shelters. Only one shelter with more than 500 bunks. Chemical toilets, artificial heating and lighting are provided. A large amount of medical work is carried on by the lay members of the Friends ambulance unit. The general health condition is fair. Only a few cases of scabies and head infestation have been reported. Manchester has one of the most interesting shelters. It is paved with walls whitewashed, and spaces bayed and bunked. Water fountains, hand wash basins, and water closets are



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in each bay. The people using this shelter are for the most part very poor. Manchester has 380 deep basement shelters accomodating 75,000 people. There are a few trench and surface shelters as well as private ones. The incidence of infectious diseases is said to be lower than ever before. Liverpool - the shelters are about the same as in other cities - but have sustained damage by children. The shelters are regularly inspected and dirty and lousy beddings are removed. Glasgow - shelters suffer from lack of unified control. Over 15,000 shelters have been put up. There are basement, trench, and surface shelters. Artificial heating and lighting are provided. Private shelters are discouraged. New castle - these shelters are about the same type of shelters and conveniences as in other English cities. The health conditions are improved. (DSG)

4636. Structural defense (Handbook 4A)  
Great Britain. Air Raid Precautions Department.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 2s. 60¢)

SHELTERS, AIR-CONDITIONED, See SHELTERS - VENTILATION

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4637. An air raid shelter to protect from direct hits.  
Killer, W.  
SCHWEIZERISCHE BAUZEITUNG (Zurich)  
1937, Vol. 109, pp. 45-46.

The shelter described is protected by a reinforced concrete, sloping roof, with which the walls are continuous, the sloping, protective structure extending to a depth below ground level exceeding the maximum depth of penetration of bombs, i.e., about 8m., according to the type of soil. The foundation slab is at a lesser depth and is concave. The section of the structure is a closed

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frame. There is no bursting course over the earth filling at the sides, in order to avoid danger from detonating bombs to neighboring buildings. The shelter proper is independent of the protective structure and is intended to be used for ordinary purposes. The entrances are at ground level.

(Building Science Abstracts, 1938, No. 213) (DLC)

4638. Air raid shelters.

Schindler, G.

SCHWEIZERISCHE BAUZEITUNG (Zurich)

1937, Vol. 110, pp. 69-70.

Shelters to withstand direct hits, designed from the standpoint of economy of concrete and space, are of the following types: - a small shelter for 10 to 12 occupants is supplied in the form of a spherical gunite shell ready for placing below ground and an upper gunite shell to serve as gaslock and observation post. The upper structure when complete is nearly conical in shape. The shelter has a ventilation plant, operated by an electric motor or by a foot pedal, to utilize ground air, filtered air, or oxygen. A "tower" underground shelter of cylindrical shape, having several stories and intended to accommodate about 70 persons - suitable as a factory shelter - has a dome shaped roof above ground level. The top floor, partly above ground, has two entrances on opposite sides and serves as gaslock and store room. The lower cylindrical structure is built at ground level and sunk as a caisson; the top structure - with a greater thickness of concrete - is connected with ground level and other buildings by tunnels. A hospital shelter built on the same principle with dome shaped roof above ground level and with a central lift and stairs is also described.

(Building Science Abstracts, 1938, No. 424) (DLC)

4639. Air raid shelters above and below ground.

Winter, A.

BAUWELT (Berlin)

1936, Vol. 27, pp. 581-585.

The most natural protection of shelters from bombs is an earth cover, which must be of sufficient depth. The use of such protection is limited in view of the high cost of underground shelters. In some cases, for reasons of economy, only a thin earth cover is provided; the value of

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the cover in that case is greatly exaggerated, and it may even be an additional source of danger. The paper is divided into three sections: (1) Protection from bombs falling at some distance. According to the requirements of the Provisional Regulations for Protection of Civil Population from Air Attacks, shelters need not be completely bomb-proof but must show a certain degree of resistance to damage by explosive bombs. The roofs must be strong enough to resist the impact and subsequent static loading of falling debris. (2) Protection from bombs falling in the immediate neighborhood. The damage done originates to a much greater extent from the actual blast of the bomb when it explodes than to the effects of air pressure, splinters and vibrations. The destructive effect of the bomb is increased when the explosion is confined. (3) Protection from direct hits. To afford sufficient protection, the roof of the shelter should be from 1 to 3 m. thick, according to the weight of the bomb it is intended to withstand. A less costly protection is an earth cover. For protection from bombs of medium weight, a cover of 4 m. of well ramped, cohesive soil is required; if the cave is of less depth it may provide an additional source of danger, due to the confinement of the explosion. The original purpose of "Bursting layers" was to cause the bomb to break up before the detonation could take place. Since, modern bombs can withstand impact effects and do not burst before detonation, the bursting layer is now used to reduce the necessary thickness of the earth cover, but its value is questionable.

(Building Science Abstracts, 1937, No 414) (DLC)

4640. Air raid shelters as separate structures.

ZENTRALBLATT DER BAUVERWALTUNG VEREINIGT MIT ZEITSCHRIFT FÜR BAUWESEN (Berlin)

1936, Vol. 56, p. 1436.

A circular letter relating to air raid shelters as separate structures, issued by the Minister for Air. The selection of the position for shelters, whether above or below ground level and the placing of "bursting layers" must depend on special conditions in every case. Practical experiments demonstrated the following points: Shelters with walls of no great thickness, e.g. brick walls 51 cm. thick, afford greater protection when below than when above ground. Shelters having thick walls, e.g. reinforced concrete exceeding 80 cm. thick, intended to protect bombs falling



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in the immediate neighborhood should be built above ground, as the walls can withstand the effect of bombs up to a certain weight exploding above ground, but are destroyed by the effect of bombs of the same weight bursting after they have buried themselves in the ground. Bursting layers are of value as protection only if there is a depth of soil at least 3 m. thick between the layer and the shelter. The layer must be placed at ground level. It should consist of loose, separate units - stone, brick, etc. - placed dry; jointed slabs of reinforced concrete or other materials should not be used. (DLC)

4641. Der Bau von Schutzräumen (The construction of air raid shelters) Heinicke, E.

Undated, Leipzig, Hachmeister u Thal. Illus.

Following a brief discussion of the necessity of protection from air attack in which some consideration is given to the nature and effects of various types of bombs, this manual details recommendations for, and numerous illustrations of the design and construction of shelters. Contents: - (1) Shelters in existing buildings -- layout and essential characters; materials and methods of construction; walls; roofs; floors; gas-locks; windows; doors; ventilation; piping systems; testing and care of shelters. (2) Isolated shelters - underground structures.

(Building Science Abstracts, 1937, No. 642) (DLC)

4642. Civil defense of public buildings.

Belknap, H. H.

SKYSCRAPER MANAGEMENT (Chicago)

1941, August-September, Vol. 26, Nos. 8, 9, pp. 8, 9, photos.

Effects of bomb blast. Danger of falling masonry. General precautions for a building given in outline form. Work of the fire brigade. Adaptability of existing buildings for shelters. Relative suitability of commercial buildings and apartment houses for the incorporation of shelters according to type of construction: (1) load bearing exterior walls of masonry supporting floors and roofs, (2) load bearing interior masonry cross walls, steel or concrete columns carrying main supporting beams and girders, and roof of light concrete or composition, (3) modern steel frame and concrete, or reinforced concrete frame construction. Floors and roofs of concrete slabs. Considerations

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in the choice of a room or section of an existing building as a shelter. Detailed suggestions for protection of buildings against air attack. (DLC)

4643. The design of armoured air raid shelters.

Regnault, P.

LE GENIE CIVIL (Paris)

1937, Vol. 111, pp. 245-247.

Following a brief mathematical discussion of the depths of penetration of bombs into mild steel, concrete, and dry soil, consideration is given to the design of shelters. It is shown that not only the roof but also the walls play an important part in the resistance of such structures to the impact and detonation of bombs. A combination of reinforced concrete and mild steel has given excellent results on exposure to bombardment. In designing shelters, consideration should not be limited to static calculations; penetration and explosion, both rapid, introduce important dynamic considerations. It is thought that many of the present formulae, developed for use in the design of shelters, should be regarded with doubt until confirmed by actual experiment.

(Building Science Abstracts, 1938. No. 622) (DLC)

4644. Directives techniques pour les constructions de défense aérienne  
(Technical instructions for air raid shelters)

Switzerland. Commission Fédérale de Défense Aérienne Passive.

1936, Berne, Bureau des imprimeries de la chancellerie fédérale.

Pp. 49, diagrs., tables.

(I) Explosive bombs: (a) Construction and effect of explosive bombs. (b) Necessary thickness to give protection from explosive bombs. Consideration is given first to direct hits. Recommended thicknesses of roofs and floors for protection from penetration and explosion of bombs weighing 50, 100 and 300 kg. are tabulated for heavily reinforced special concrete, calcareous rock or normal reinforced concrete, plain concrete, and for tunnels in soft rock, gravel and sandy soil. (c) Principles of design and execution. Structures shall be designed in accordance with the existing Swiss specifications for steel, concrete, and reinforced concrete structures, and timber structures. (II) Incendiary bombs: Construction and effect, protection from. Floors to withstand penetration of bombs



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weighing up to 2 kg. III. Gas bombs. (a) Construction and effects of gas bombs. (b) Protection from gas bombs. Gas bombs are stopped by shelter roofs designed to withstand explosive bombs of the same weight. Sufficient protection against gas infiltration is provided by a solid wall 25 cm. thick, with good joints and rendered on both sides. IV.

Ordinary shelters. (a) Minimum requirements. These shelters, for the civil population are intended to give protection from the debris, splinters and blast of explosive bombs, from incendiary bombs, and from fire and gas bombs. (b) Plan and layout of ordinary shelters: This section deals with the site, dimensions, entrances, gas-locks, decontamination, lavatories, ventilation and water services, power and light, heating, equipment, signboards. (c) Construction: roofs and floors, walls. (d) Provisional types and construction for ordinary shelters. The erection of types of construction involving constant inspection and high cost of upkeep may be deferred to a time of emergency. V. Shelters to withstand direct hits. These are shelters satisfying the conditions for ordinary shelters and those of shelters to withstand the effect of direct hits from bombs weighing 60 kg. or more.

VI. Special shelters. (a) Public collective shelters. It is desirable to distribute public shelters as widely as possible. Large shelters should include a sick room, similar to that of a first aid post. (b) First-aid post. VII. Covers. By covers are meant dug outs and ramparts or sand bags giving protection from splinters but not from gas. The conditions where they may be used, dimensions, etc., are stated. VIII.

Protection of buildings. (a) Minimum requirements - A structure shall be considered resistant to incendiary bombs if able to withstand the direct effect of incendiary bombs up to 2 kg., or as resistant to fire if able to withstand the indirect effect of incendiary bombs for at least 4 hours. A structure is adequate if, being resistant to blast, ground vibrations and fire, it sustains only local damage from direct hits of bombs of medium weight without collapsing. (b)

Measures for protection of buildings. Complete protection can only be insured by thorough measures of protection against direct hits. This is possible and necessary only in exceptional cases. In general, it is necessary to insure that buildings will be no more than slightly damaged and will neither take fire nor collapse. The measures for protection from incendiary bombs include the construction of a special floor in the attic story, or preferably of



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a special type of roof: The construction of a massive floor in the attic without corresponding strengthening of the part of the building situated below is to be condemned in all cases where the lateral supports may be destroyed and cause collapse of the heavy floor.

Building Science Abstracts, 1938, No. 429) (DLC)

4645. Doors of air raid shelters.

Schoole.

ZENTRALBLATT DER BAUVERWALTUNG VEREINIGT MIT ZEITSCHRIFT FÜR  
BAUWESEN (Berlin)

1936, Vol. 56, pp. 148-156.

Reference is made to certain erroneous views relating to the construction of air raid shelters. Doubts are frequently expressed as to the suitability of cellars on the ground that the gases from bombs are heavy and tend to sink and settle. It is pointed out, that once diluted with air, gases do not settle and concentration diminished fairly rapidly. Cellars have the advantage that their walls are partly underground and are thus protected from gas. Usually in any discussion of the infiltration of air into shelters, only the pressure exerted by a wind of a certain velocity on the outside wall surface is taken into consideration, the low pressure inside the room being neglected. In general, however pressure differences require consideration, and, to ensure exclusion of outside air from the shelter, air pressure within the shelter would have to at least equal that without. The provision of gas proof doors for shelters is considered on the basis of experience gained in tests carried out at the Army School for Gas Protection (Heeresgas-schutzschule). As an emergency measure, screens may be fixed over openings which cannot otherwise be rendered gas proof, with the exception of doors which have to be opened. Wooden doors can be quickly made and rendered gas proof. A suitable door is made of boards, which must not be warped, planed on one side. To reduce as far as possible the risk of warping, the door should be braced horizontally outside and the board should not be glued but simply screwed to the bracing. The planed inside surface should be rendered gas proof by a paper coating; it is important that any cracks appearing in the paper should be immediately repaired. Means of rendering air tight are described. In the case of steel doors, a well braced single door is to be preferred to a double door. Various types of door fastening are described, and the need for simplicity

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for safety, is emphasized. For the prevention of infiltration of air between door and frame, the most suitable means so far devised is rubber tubing fitted into a groove. Brief consideration is given to the door frame, means of preventing infiltration between frame and wall, and the use of double-wing doors.

(Building Science Abstracts, 1937, No. 645) (DLC)

4646. Herrichtung von Luftschutz-räumen in bestehenden Gebäuden (Establishment of air raid shelters in existing buildings)  
DEUTSCHE BAUZEITUNG (Berlin)

1937, August, Vol. 73, No. 35, p. 739.

According to regulations, all occupants or users of a building, for whose protection the shelter is established, must contribute to the erection of the shelter. These contributions may consist of presenting already prepared rooms, of donating building material or instruments, or of useful labor. For each person to be sheltered a space of 3 cubic-meters must be provided.. A gas-lock, in its simplest form, should be attached in front of the shelter, and the necessary number of auxiliary exits must be arranged. Strengthening of the ceiling in its weight-carrying capacity is essential and these shelters, though perhaps used for other purposes in time of peace, must never lose their characteristic as usable and ready raid shelters in war. (DLC)

4647. Luftschutz (Air raid defense)  
TECHNISCHES GEMEINDEBLATT (Berlin)

1936, December 10, Vol. 39, No. 12, pp. 288-290.

A description of the construction of underground air raid shelters-built to withstand effects of bombs. Methods for use of the three principal kinds of building materials, i.e., steel, wood, and concrete. Protective material for walls in the homes should be at least 25 cm. thick. Many satisfactory tests have been made during the last year for each type of material. Wood is especially treated to render it fire resistant. Important constructive measures for new buildings. Formation of special fire brigade. Mutual participation in blackout technique. (DSG)

4648. New types of air raid shelter  
Schoszberger, H.  
BAUWELT (Berlin)

1936. Vol. 27, pp. 591-597.

The usual type of shelter for civilians is designed to



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withstand the effects of debris, bomb-splinters, and gas. Only in exceptional cases are shelters built to withstand direct hits from high explosive bombs. A new method which aims at reducing the cost of bomb-proof shelters consists of building a series of shelters one above the other - instead of side by side - and of making the roof of such a shape that bombs falling on it will ricochet. The investigations of Bieser on the design of roofs of shelters indicate that the depth of penetration of a bomb bears a direct relationship to the compressive strength of the material. The German regulations for the construction of air raid shelters do not prescribe a definite roof thickness for bomb-proof shelters. In general, a shelter giving protection from explosive bombs weighing 660 pounds will be the maximum obtainable, from the economic standpoint. The regulations of other countries usually state a certain roof thickness to withstand bombs of a given weight; this thickness can then be reduced by a certain amount, which is dependent on the number and design of floors above the roof of the shelter or on the earth cover. Even greater difficulties arise in the attempt to develop a mathematical basis of design for the walls of shelters. On the basis of experience, the author suggests for an underground shelter a wall thickness approximately 40 per cent that of the roof thickness. The floor should be of the same thickness as the wall. Very rigid connections between the roof, walls and floors of shelters are necessary; this can be effected by continuing the reinforcement of the roof to the walls, and the walls to the floor. Reference is made to the use of a "bursting layer" - the protective effect of which, in general, is greatly exaggerated, to the need for carefully placing such layers in a suitable position, and to their high cost. The depth of earth required above a shelter depends on the type of soil; with a soil of moderately good quality a depth of at least 13 ft. is necessary. The greater the depth at which the shelter is situated the greater the cost; it has, therefore been found to be more economical to design for greater strength at a lesser depth. In Germany, individual shelters for the civil population are, in general, not recommended. Shelters of this type - constructed in other countries for the civil population - are described. It is pointed out that with such private shelters, set up for instance in a courtyard, there is danger of the occupants being imprisoned in the shelter by the debris of the neighboring houses.

(Building Science Abstracts, 1937, No. 643) (DLC)



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4649. Recent developments with air raid shelter closures.

Schoole,

ZENTRALBLATT DER BAUVERWALTUNG VEREINIGT MIT ZEITSCHRIFT FÜR  
BAUWESEN (London)

1938, Vol. 58, pp. 529-37, illus, photos.

Designs of closures must always allow for the fitting of splinter proof protection on the outer side, gas proof protection on the inner side. Steel has been most widely used as a material for closures; wooden closures are as yet not completely satisfactory. Wood, faced on both sides with asbestos-cement, has proved successful. During recent months reinforced concrete closures have been produced, which result in a great saving in steel. The position as regards material for gas-proofing is less well defined. Apart from felt proofing of wooden doors, rubber is almost exclusively employed. The importance of removing the rubber before painting the door is stressed. Details of the different mechanical properties of rubber proofing are given, and questions of fitting and fixing the rubber in its grooves are discussed. Requirements for thickness of metal are discussed, and it is pointed out that riveted and spot welded joints are not watertight. Various types of fittings used in connection with doors are discussed, such as locking devices, handles, removable thresholds, etc.

(Building Science Abstracts, 1939, No. 632) (DLC)

4650. Schutzraumbau (Air raid shelters)

Vieser, W.

1937, Berlin, Zementverlag. Pp. 71, illus, bibl.

A concise summary of present knowledge and practice relating to the construction of air raid shelters. Contents: The aims of structural air raid precautions. The construction of shelters in existing buildings: type, size and position of shelter; provisional construction; permanent construction; strengthening walls and foundations; strengthening floors with reinforced concrete and other materials; shelters in new buildings; general principles; methods of construction in reinforced concrete and steel; floor thickness and means of reinforcing floors. Shelters are separate structures: general principles; shelters in stair cases; towers; bomb-proof saps and tunnels; lighter forms of underground construction; reinforced concrete; steel lamellae; corrugated iron pipe; boiler plate; sheet pile; spun concrete

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pipe, etc.; small shelters above ground; large shelters; the use and equipment of underground railway stations and subways. General principles of construction, equipment and fittings, cost.

(Building Science Abstracts, 1937, No. 1465) (DLC)

4651. Splinter proof shelters for factories and large buildings (including adaptation of basements, shelters in the open, and shelters in the hillside, etc.)

CEMENT AND CONCRETE ASSOCIATION

1938, London, The Association. Pp. 16, illus.

Information and advice relating to the provision of splinter-proof shelters in existing buildings, with special reference to the utilization of basements are given. The properties and dimensions desirable in the overhead protection, roofs, walls and floors, together with the exclusion of water and gas, are discussed. Statistics and Home Office recommendations relating to the thickness, compositions, etc. of the various types of shelters are included.

(Building Science Abstracts, 1938, No. 1860) (DLC)

4652. Structural air raid precautions in new buildings erected during the rebuilding of an old part of Hamburg.

Piegler, W.

BAUWELT (Berlin)

1937, Vol. 28, pp. 384-388, illus.

A brief account, including statistical data, is given of measures for slum clearance and the erection of blocks of flats for workers in a scheme initiated in 1933 and 1934. The agreements for sale of the sites - which were State property - to building societies and private contractors contained definite conditions relating to the provision of protection from air attack in the projected structures. In the new blocks of flats, the basement rooms are to be constructed to serve as shelters. Ordinarily the rooms are used as laundries. Protective measures have been taken in the attics. Data on costs are given.

(Building Science Abstracts, 1937, No. 1699) (DLC)

4653. Structural defence from air attack.

Schossberger, H.

DEUTSCHE BAUZEITUNG (Berlin)

1935, Vol. 69, pp. 219-226.

An illustrated account is given of the design and construction



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of the air raid shelter in a new building and of the measures necessary for the reconstruction of a cellar for that purpose. Expert advice should be sought in regard to the strengthening of existing floors over cellars by additional supports, because, if the work is inexpertly planned, there is danger of the load-bearing capacity of the floor being reduced even under normal conditions. Reviewing measures for the protection of buildings from explosive bombs, the author recommends a steel or reinforced concrete frame as the most suitable type of construction for large buildings, which may be exposed to direct hits by explosive bombs. Small buildings should be of massive construction capable of withstanding blast, splinters, and debris. All buildings should have good foundations to lessen the effect of earth vibrations. The difficulty of protecting existing buildings from explosive bombs is discussed and brief suggestions are made for special cases. A reinforced concrete slab roof 8 cm. thick would, give adequate protection from the impact of the smaller incendiary bombs. Steel roofs have also been recommended for that purpose. Where a concrete or steel roof cannot be provided, the attic floor must be of sufficiently strong construction. Protection of buildings from the effects of gas is not necessary; building materials, including steel and iron, are not damaged to any serious extent by the chemicals (even when strongly concentrated) used in warfare. Gas settled on roofing paper does not penetrate but will lie dissolved for a long time and is removed only with difficulty. Oil paint prevents the penetration of gas that has settled on the surface.

(Building Science Abstracts, 1937, No. 2343) (DLC)

4654. The testing of stronghold material and design.

Sommerfeld, K, J.

AIR RAID PRECAUTIONS INSTITUTE. JOURNAL (London)

1939, Vol. 1, pp. 191-198

The characteristic of a material by which it resists penetration of missiles, is its chisel strength. The depth of penetration of any missile is proportional to the energy per unit area of the missile and inversely proportional to the resistive power of the material hit. The chisel strength is proportional to energy expressed in foot tons which 12 cu. in. can absorb. A method of testing the



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chisel strength of a material by means of a ram is illustrated. By this means a comparison of the cost, and of the amount of resistance offered by various materials used in the construction of air raid shelters is possible. In order to reproduce more closely the effect of explosive missiles the "centrifugal gun method" was devised. A model bomb is attached to a revolving wheel and, when the speed of rotation of the model bomb has equalled that of an aerial bomb, it is permitted to fall on the sample to be tested.

(Building Science Abstracts, 1939, No. 543) (DLC)

4655. The use of old materials for the construction of shelters.

Braun, F.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1936, Vol. 6, pp. 115-121.

The necessary contributions of the state to the cost of air raid protection can be reduced to some extent by the use of old material. Old boilers and iron containers, sufficiently large, and, if possible, of cylindrical form, can be utilized for the construction of shelters. Pipes, etc., are removed; if there is no manhole to serve as an emergency exit, an opening is made in one wall as far as possible from the fire doors, which will be used as the entrance to the shelter. Both openings must have gas-tight doors. An anti-corrosive paint coating should be applied. Openings for ventilation, lighting, and telephone connections should be provided and must be gas-tight. When this preliminary work is complete, the boiler should be lowered into a trench, the depth of which will depend on the dimensions of the boiler and the thickness of protection to be provided above it. The shelter should rest on a brick or concrete foundation of adequate length and width provided with means for drainage. Another method of utilizing old boilers, etc., in shelter construction consists in cutting the boiler longitudinally into two sections and using each as the upper part of a shelter, supported on brickwork or concrete walls. Portable individual shelters for watchmen and others may be constructed from smaller boilers, and the like.

(Building Science Abstracts, 1937, No. 1467) (DLC)

## SHELTERS, BASEMENT

4656. Technical details in the construction of air raid shelters.  
 Heinicke, E.  
 ZENTRALBLATT DER BAUVERWALTUNG VERFINGT MIT ZEITSCHRIFT FÜR  
 BAUWESEN (Berlin)  
 1935, Vol. 55, pp. 181-186.  
 Detailed recommendations for adapting existing cellars  
 and basements to form satisfactory shelters during air  
 raids.  
 (Building Science Abstracts, 1935, No. 809) (DLC)

## SHELTERS, CONCRETE

4657. Concrete for bombproof shelters.  
 David, L.  
 ZEMENT (Berlin)  
 1935, Vol. 24, pp. 23-27.  
 Owing to the very high compressive, shear, and tensile  
 strength required in a concrete used in the construction of  
 bombproof shelters, the selection and preparation of the  
 material requires particular care, and the best materials  
 only should be used. The reinforcement should consist of  
 a steel with a high yield point, and it is advisable that  
 a heavy proportion of the reinforcement should be of the  
 grille or mesh type commonly used in the construction of  
 reinforced concrete strongrooms. The author discusses the  
 selection of suitable materials, and the proportioning,  
 mixing and placing of concrete in the construction of re-  
 inforced concrete bomb shelters.  
 (Building Science Abstracts, 1935, No. 808) (DLC)
4658. The design and construction of external strongholds.  
 DeSteiger, C. F.  
 THE BUILDER (London)  
 1938, Vol. 155, pp. 985-987.  
 External strongholds are defined as those the construction  
 of which is independent of other buildings. After a brief  
 survey of high explosive bombs, it is emphasized that  
 concrete is the most suitable material with which to resist  
 them and that reinforced is preferable to mass concrete.  
 Types of reinforcement tending to produce a layer along  
 which the concrete may shear under the effects of explosion,

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must be avoided. High-quality concrete best manufactured by vibration, is necessary. The advantages of thin slabs, separated by loose material, instead of concrete in one piece, are stated. Such an arrangement might, however, permit penetration to an intermediate slab before explosion, the effect of which the superadjacent slabs would then accentuate. Strongholds, should be used only to house vitally important activities.

(Building Science Abstracts, 1938, No. 2520) (DLC)

4659. A movable concrete shelter.

SHIPBUILDING AND SHIPPING RECORD (London)

1941, May 15, Vol. 57, No. 20, p. 474.

Known as the "Raidsafe shelter" constructed of 12 in. concrete, built to accommodate 4, 8, or 16 persons, and comprising end, center, and door units, this shelter is easily dismantled and moved in sections; it is recommended for factories to help maintain production during air attacks, and is easily adapted for fire spotters and gate keepers. (DLC)

4660. Povitriane bombarduvannia mist i ruinuval'na diia aviabomb.

(Air bombardment of cities and destructive effects of air bombs)

Shpol'skii, O. K.

ARKHITEKTURA RADIANS'KOI UKRAÏNY (Kiev)

1940, July, No. 7, pp. 26-28.

With his knowledge of materials of the Spanish war the author concludes that the most reliable shelters are those of reinforced concrete. Barcelona's experience with such shelters showed that in spite of heavy bombardments the list of casualties was small. The Barcelona shelters were very large and had several entrances. The depth was 14 meters and the shelters were built under the center of the populated areas. They were tunnel-shaped and two cross tunnels were cut on a direct angle. Buildings above tunnels offered additional protection and where there were no buildings additional reinforced covers were placed on tunnel roofs. Experience showed that less corrugated covering afforded better protection than the heavy and thick roofing. The three layers of heavy roofing were destructible and, when wrecked, served as additional danger. Shelters having three layers of ferre-concrete and filled with sand in the spaces between layers proved substantial. Shelters near water pipes were found dangerous because of



## SHELTERS, CONCRETE

flooding from mains broken under bombardment. Dug-out shelters for ten persons were 2.1 meters deep and 0.6 meters wide. The roof of such a dugout is 0.7 meters thick and is covered with corrugated iron on which a layer of rubble is deposited for added protection. (DLC)

4661. The use of reinforced concrete for fortifications on air raid shelters.

Bazant,

SCIENCE ET INDUSTRIE (Paris)

1938, Vol. 21, pp. 165-176.

Armour plate, owing to its inherently high resistance to impact and penetration, offers the best known protection from projectiles, while plain concrete, although it may be sufficiently hard to resist penetration for more than a short distance, is less elastic and tends to fracture under impact. Reinforced concrete, however, combines the valuable properties of both the armor plate and plain concrete and, although greater thicknesses than are necessary in the case of armor plate are required to obtain an equal degree of resistance, the cost of materials and construction is much less. Reference is made to the results of research on the physical properties of concrete, particularly the relationships between the shear, impact, compressive and tensile strength of the material, and the bearing these results have on the mechanical effects of impact, penetration and exposure.

(Building Science Abstracts, 1938, No. 1859) (DLC)

## SHELTERS, EQUIPMENT

4662. Die Einrichtung des Schutzraumes (Furniture and appointments within the shelter)

Wirth, Fritz and Muntzsch, Otto

DIE GEFAHREN DER LUFT UND IHRE BEKAEMPFUNG (Berlin)

1933, pp. 151-156.

Quiet and order must absolutely prevail within the shelter. Smoking is prohibited and lighting must be by electricity. The chosen shelter place will always need certain equipment: pillows, blankets, drinking water, bandaging and dressing material, felt, wax, wooden boards, sand, and such implements as hammer, nails, saws, shovels, pails, water for fire extinguishing. Shelters must be made gas-tight and protected against fire and bomb-splinters. Ventilation must be safeguarded. (DLC)

SHELTERS, FACTORY. See SHELTERS, INDUSTRIAL

SHELTERS, FURNITURE. See SHELTERS, EQUIPMENT

SHELTERS, GASPROOF

4663. Anti-gas shelters.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS. JOURNAL (London) 1938, December 6, Vol. 65, No. 13, pp. 649-682, illus.

Many shelters have been constructed for the protection of the people against poison gas attacks. According to the Home Office the minimum requirements for shelters that are not ventilated are 75 sq. feet of floor, "per person". This shelter can be occupied up to six hours. For the ventilated shelters, 150 feet of cubic air should be provided for each person per hour with 6 sq. ft. of "floor space". In most cases anti-gas shelters are not provided with heating arrangements. Ventilation may be maintained continuously in anti-gas shelters by an air filtration plant. There are illustrations of gas proof shelters and a small Diesel Engine used as an air filtration unit. (DLC)

4664. Gas-tight doors for gas-proof shelters.

Dieckmann, D.

ZEITSCHRIFT DES VEREINS DEUTSCHER INGENIEURE (Berlin)

1936, Vol. 80, p. 1143.

A brief extract is given from a thesis on the construction of air raid shelters by Fehse (Dissertation, Technische Hochschule, Brunswick, 1035) A gas lock should be part of the entrance to every shelter. Steel window shutters are the most satisfactory and can be easily removed when not required. Artificial ventilation may be necessary. In principle, only a system producing an excess pressure in the room should be used, so that no air from without can penetrate should any part of the structure be no longer air tight. The simplest system is one by which air is drawn in by suction through a duct and filtered before passing into room; the suction system should be electrically driven but should also be arranged for operation by hand, if necessary. A second duct should be provided as an outlet for stale air.

(Building Science Abstracts, 1937, No. 644) (DLC)

## SHELTERS, GASPROOF

4665. Testing the gas-tightness of air raid shelters.

Diegler, W.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1936, Vol. 6, pp. 15-17.

An illustrated description is given of portable apparatus which may be used both for pumping air into or withdrawing air from a sealed shelter. When any desired pressure is attained within the room, it records and automatically indicates any change of pressure after pumping has been discontinued, thus warning of any infiltration of gas into the room, or escape of air from the room. In practice, it is best first to produce an increase of air pressure within the room, then to seek and remedy any leakage revealed by a fall in pressure, and finally to apply the reduction of pressure test.

(Building Science Abstracts, 1937, No. 1459) (DLC)

## SHELTERS, GOVERNMENT POLICY

4666. Air raid shelter policy, Report (Cmd. 5932)

Great Britain. Parliament.

1938, December 20, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 2d. 5¢)

## SHELTERS, HEATING

4667. Improving air raid shelters.

ELECTRICAL REVIEW (London)

1941, October 11, Vol. 127, No. 3281, p. 305.

Many accidents in shelters have been caused by imperfect wiring. It is very important that wiring should be correctly, efficiently and properly grounded. There are three photographs: (1) Fan heater, which provides both warmth and ventilation; (2) An electric fire which gives comfort, prevents illness and can be used to boil water in a kettle; (3) Electric kettles and hot plates, which provide hot drinks and hot water for first aid purposes. (DLC)



## SHELTERS, HYGIENIC CONDITIONS.

4668. Air raid and the tuberculous.

Bennett, P. L. T.

THE BRITISH MEDICAL JOURNAL (London)

1940, October 12, No. 4162, p. 502.

The danger of tubercular persons contaminating others in air raid shelters is stressed. Many persons suffering with this disease are reported mixing with healthy people and because of the nightly strain are becoming ill in the shelters. For the protection of the patient as well as the healthy persons, it is necessary to prevail on those suffering with tuberculosis to "stay put" in their homes and not to make nightly pilgrimages to air raid shelters. Relatives of these patients who live in the country are urged to make accommodations for them in their homes if possible. (DSG)

4669. Control of lice in shelters.

Gray, A. M. H.

THE BRITISH MEDICAL JOURNAL (London)

1941, January 4, No. 4147, p. 29.

Measures for preventing infestation include frequent change of underclothes, the washing of the body and clothes, and the airing of clothes. Wartime crowding promotes the spread of lice. Every member of the community can do as much as the medical officers in preventing this condition. (DSG)

4670. Health conditions in raid shelters.

THE MEDICAL OFFICER (London)

1941, February 8, Vol. 65, No. 6, p. 51.

Dr. Vynne Borland, M.C.H. reports on health conditions in air raid shelters and asserts that the present dangers of widespread ill-health make it necessary to adopt a National Medical Service. Even after improvements to the shelters have been made the "tip and run" medical service may not solve the problems of health arising from the inevitable herding together of many people every night and, possibly also, some part of the day. The instinct for men and women to seek safety in deep shelter is natural, but the evil effects of overcrowding and mass infection can be minimized substantially only by improvement in ventilation in all shelters. (DSG)

## SHELTERS, HYGIENIC CONDITIONS

4671. Hygiene in air raid shelters.  
THE BRITISH MEDICAL JOURNAL (London)  
 1941, January 4, No. 4474, pp. 26-28.  
 The problems of overcrowding, sanitation, and the elimination of communicable diseases with suggestions as to how sanitary measures can be carried out. (DSG)
4672. Hygiene of the air raid shelters.  
THE BRITISH MEDICAL JOURNAL (London)  
 1940, October 5, No. 4161, p. 257. (DSG)
4673. Infection in the shelters.  
THE BRITISH MEDICAL JOURNAL (London)  
 1940, November 2, No. 4165, p. 598.  
 Due to the lack of proper sanitation this summer, paratyphoid fever has been unusually prevalent. Construction, conditioning, and equipment of shelters are a medical as well as an engineering problem. Immunization for diphtheria, smallpox and fever. Suggestions to reduce pulmonary tuberculosis, and respiratory infections. Infective diseases should be diagnosed early. (DSG)
4674. London air raid shelters revisited.  
THE BRITISH MEDICAL JOURNAL (London)  
 1941, September 20, No. 4211, pp. 414-415.  
 An investigation, nine months ago, on behalf of the British Medical Journal, into the health conditions of London public shelters revealed that tube stations used for shelters and bunked for 22,800 should accommodate only a tenth of that number. Many prefer to sleep on the floor on mattresses rather than in bunks. Medical aid posts, canteen points, drinking water, and lavatories have been provided in every station; ventilation and sanitation have been improved. Large shelters have been improved by replacement of wooden bunks with steel, white washing and proper lighting. Surface, domestic, and communal shelters are sprayed and cleaned once a week. All types of shelters show better care and improvement. In bomb raids no breakdowns in construction appeared. The Ministry is studying the reduction of shelter infection. (DSG)

## SHELTERS, HYGIENIC CONDITIONS

4675. Report of Lord Horder's committee.  
THE BRITISH MEDICAL JOURNAL (London)  
 1940, November 30, p. 768.  
 An official committee reports on health conditions in public shelters. (DSG)
4676. The shelter problem.  
THE BRITISH MEDICAL JOURNAL (London)  
 1940, December 7, pp. 801-802.  
 The shelter problem from the medical point of view. Overcrowding. Smaller shelters preferred. Inoculation of children. (DSG)

## SHELTERS, INDUSTRIAL

4677. Defects frequently found in air raid shelters in factories.  
 Zenner, A.  
 BAUWELT (Berlin)  
 1937, Vol. 28, pp. 379-381.  
 Planning of air raid shelters in factories is frequently inadequate, particularly where the shelters are reconstructed cellars. In principle, the shelters should be evenly distributed over the whole area covered by the buildings. The danger from falling debris in old buildings is frequently underestimated and the strengthening of the cellar roof is inadequate. Shelters are frequently situated under or near store rooms containing combustible materials; a fire breaking out in the store room would so heat the reinforced concrete shelter roof that a prolonged stay in the shelter would become impossible. Hot-water pipes placed against shelter walls should be insulated to prevent heat transfer to the walls. A satisfactory air supply in shelters is important, particularly in certain works where the clothing of the occupants may have disagreeable odors or where a prolonged stay in the shelter may be necessary. In planning shelters in old buildings it is necessary to consider the position of the waste-water, steam or hot-water pipes. Means should be taken to ventilate shelters when not in use. A projecting concrete canopy will protect the external doors of shelters from rain and splinters.  
 (Building Science Abstracts, 1937, No. 1702) (DLC)



## SHELTERS, INDUSTRIAL

4678. The engineering aspect of air raid precautions.

INDIAN ENGINEERING (Manchester)

1938, December, Vol. 104, No. 6, pp. 182-183.

Factory and property owners must protect their employees against air raids. The possibility of damage to property cannot be precluded. The following is recommended for shelters; a steel frame will give maximum resistance and should be able to withstand blast pressure and possible suction; whatever happens to the walls, which are the weaker parts of the structure, the frame must hold. The Austin Motor Co. shelters provide an excellent example; they have trenches 150 yards long, brick walls, and concrete roof. These shelters will provide protection for their 22,500 employees. (DLC)

4679. Permission to use (company) shelter.

THE LAW TIMES (London)

1940, July 27, Vol. 190, No. 5078, p. 47.

"If we invite the public on our premises and an accident occurs through a fall over an obstacle left lying about by our employees we should run the risk of being sued for damages. The lay public using our shelters - would be agitated, unfamiliar with our works; and, upon entering into total darkness, would very likely meet with an accident. It is not difficult to imagine acts of omission that would make the owner liable, and careful inspection should be made after the last person leaves. The relative acts do not modify the common law on the subject. Members of the public, using company shelters, are asked to be careful and to use suitable torches when possible." (DLC)

4680. Plans and forms of air raid protection in gas and coke works

Megger R. and Schairer, W.

DAS GAS UND WASSERFACH (Munich)

1937, Vol. 80, pp. 248-256.

Particular reference is made to measures adopted in a gas works at Stuttgart. The need of expert planning in protection is emphasized. Whether a collective shelter or individual means of protection is the more desirable depends on the size of the works and the number of the staff. In general, a collective shelter is more economical. A tunnel has been made gas-tight. In the case of large works in congested districts, one or more public shelters should be provided. Only the works staff should have access to the staff shelters. Special provision is essential for the

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emergency staff on duty during air raids. The regulations specify that splinter proof shelters and gas masks shall be provided for the emergency staff. Small reinforced concrete cells have been built where least likely to be endangered by falling debris. Machinery may be protected from splinters by sheet steel, wood or brick work. Protection from other than splinters is very costly. Since the staff on duty in the works would be small during a raid, it has been thought necessary to construct observation posts from which the works could be viewed from a distance during the course of the attack. Three such posts have been established. A brief account is given of the procedure followed on receiving warning of an approaching attack. Camouflage presents special difficulties in the case of gas works; multi-colored treatment (disruptive painting) may tend to make a building more conspicuous. Painting in colors, which blend with the surroundings, as well as the concealment of shadows by vegetation is, however, frequently satisfactory. It is difficult to conceal the radiation from glowing coke at night. Quenching is no use, as the resulting steam would be even more conspicuous. (Building Science Abstracts, 1937, No. 1291 (DLC))

4681. Shelters for factories.

Wondland.

BAUWELT (Berlin)

1937, Vol. 28, pp. 381-383.

For strengthening the roof of cellars to be used as air raid shelters, steel is preferable to wood, as the latter occupies more space, costs more, and is less durable. Descriptions are given of the construction of a shelter of steel sheet piling for 80 occupants, a shelter of steel box piling for 100 occupants, one of steel plates forming an arch, for 100 occupants, and one of galvanized corrugated iron pipe. The shelters are partly below ground level. If built as underground structures, their cost will be materially increased. The sheet pile structure is economical where a large number of persons have to be accommodated and where space is limited, as for example, for shelters in towns or in large factories with little open space available. Box pile structures are also satisfactory for important purposes owing to their great strength but for general use their cost is prohibitive. The steel plate, arch structure, for which copper-steel plates 3 mm. thick are

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used, is economical both for large and small shelters. The galvanized iron shelter is made from curved sheets of the material formed into cylinders 2 m. to 3 m. long and joined together to the required length. The joints are then riveted, caulked with strips of rubber and bitumen-impregnated jute, and coated with bitumen. This type of structure is rapidly erected and at low cost.

(Building Science Abstracts, 1937, No. 1701) (DLC)

## SHELTERS, LIGHTING

4682. Air raid shelter wiring.

Lesser, J. J.

THE ELECTRICAL REVIEW (London)

1940, September 6, Vol. 127, No. 3276, p. 198, illus.

When shelters are built by reliable contractors, lighting and heating are installed with strict regard to safety and efficiency. When the work is done by amateurs the strict requirements of the Institution of Electrical Engineers are not observed. In some domestic shelters wire for light and heat has been strung from the house to the shelter, a hazard which is obvious to any electrical contractor. Faulty grounding of electrical installations is considered much more dangerous in air raid shelters than in private houses. (DLC)

4683. Ways of wiring ARP trenches.

Gilbert, T. C.

ELECTRICAL TRADING AND RADIO MARKETING (London)

1939, December, Vol. 11, No. 122, p. 55.

Attention has been given to the matter of wiring shelters, trenches, first-aid posts, and cleansing centers. Public power companies cannot be relied upon. In large shelters, one watt per 10 sq. ft. should be provided, a room 50 ft. by 40 ft. requiring 200 watts. Batteries should be of such capacity as to permit the uninterrupted operation of lights for at least six hours, varying with local conditions. Since batteries may be left unattended or neglected for long periods, the nickel-iron battery would be better than the ordinary lead-acid battery. (DLC)



## SHELTERS, MORALE

- 4684.
- Community living in the shelters of London.

SCHOOL AND SOCIETY (Lancaster, Pa.)

1941, September 6, Vol. 54, No. 1393, pp. 159-160.

From a statement by Prime Minister Winston Churchill "London can take it again". Shelters are being made more habitable and are more like clubs than mere refuges from danger. Educational and recreational facilities are being provided, also adequate heat and light. These preparations are made in anticipation of renewed bombing attacks. (DLC)

## SHELTERS, MULTIPLE FUNCTION

- 4685.
- San Francisco's garage development.

SKYSCRAPER MANAGEMENT (Chicago)

1941, August, Vol. 26, No. 8, pp. 6-7, 24.

Large underground space in the heart of the downtown area, at Union Square, is utilized to provide ample facilities for parking in an unusual structure extending four stories below the street surface level. According to the advice of architects, engineers, and military authorities, the garage as designed will afford a very desirable civilian refuge. With additional cost it can also be converted into an all purpose shelter. (DLC)

SHELTERS, PLANS. See SHELTERS, DESIGN AND CONSTRUCTION

SHELTERS, SCHOOL. See SCHOOLS

SHELTERS, TUNNEL.

- 4686.
- Measures for the utilization of tunnels for protection from air raids.

Tolke,

DER BAUINGENIEUR-ZEITSCHRIFT FÜR DAS GESAMTE BAUWESEN (Berlin)

1936, Vol. 17, pp. 96-99.

A review of a paper by Pini (Abali dei Lavori Pubblici, May, 1935) which considers the reconstruction of underground railway tunnels to serve as air raid shelters in accordance with Italian legislation requiring such tunnels to be

## SHELTERS, TUNNEL

converted if possible. Pini holds that the effect of bombs of an average weight of 550 lbs. dropped from a height of 13,000 ft. would have to be considered, and recommends a cover of at least 8 ft. of rock or concrete or 46 ft. of soil. In the construction of new underground railways, provision should be made for decontamination stations at the entrances, and details of suitable construction are given. Precautions would have to be taken to prevent penetration of gas into the tunnel via subterranean watercourses. Consideration is given also to the air and space requirements per person, ventilation, lighting, water supply, etc. in tunnel shelters. (DLC)

4687. Das Unterirdische Paris als Luftschutzraum (underground air raid shelters in Paris)

DIE UMSTAU (Frankfurt)

1936, June 14, Vol. 40, No. 24, pp. 465-466.

Soon after World War I, Paris began construction of air raid shelters for its population. Provision was made for 40% of the 4 million inhabitants. This work cost approximately 300 million francs. Some of the large shelters, 600 square meters in width and 2.4 meters high, could accommodate 450-500 persons each. It is estimated that one tenth of the city was tunneled for this purpose. Consideration was given to making the shelters easily accessible to the bulk of the population. (DSG)

## SHELTERS, VENTILATION

4688. Air raid defense and the ventilation of air raid shelters.

HEATING AND VENTILATING ENGINEER (London)

1937, Vol. 11, pp. 185-190.

Ventilation plants for air raid shelters may use a filter which purifies the air by means of activated carbon, or an anti-arsine filter. Gases and vapors are retained in the carbon, and smokes and fumes are held back by the especially large surface area, non-hygroscopic and low resistance filtering medium contained in the casing. Satisfactory results have been obtained from tests of the purification of air containing phosgene and chloropicrin in comparatively high concentrations. The results of tests with arsine are stated to have been especially satisfactory.

(Building Science Abstracts, 1938, No. 1048) (DLC)

## SHELTERS, VENTILATION

4689. Air raid precautions.

Pallot, A. C.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS. JOURNAL (London)  
1938, Vol. 6, pp. 230-252.

The Home Office recommendations as to the dimensions, occupancy, and rate of air supply to shelters above and below ground level are outlined and the major problems in the ventilation of such structures are discussed. Chief of these is the dissipation of heat and humidity. The site of a shelter should be inherently cool. Walls should not be exposed to solar radiation, and wood and other materials of low thermal conductivity should not be used in their construction. In this respect reinforced concrete has many advantages. Plaster-board linings are of use as moisture absorbents. Consideration is given to the phenomena of heat loss from the human body, and the use of such phenomena in planning conditions within a shelter and for circulating ventilation requirements.

(Building Science Abstracts, 1938, No. 1696) (DLC)

4690. The essentials of air raid shelter ventilation.

HEATING AND VENTILATING ENGINEER (London)

1939, Vol. 12, pp. 446-452, illus.

An internal pressure is essential in air raid shelters in order to insure that all air leakages are outward and that no unfiltered air can enter. Double doors, with an air lock between, should be provided if ingress or egress is to be made during a raid. Inlets should be as far apart as possible or duplicate fresh air inlets should be provided. Inlets should be carried to a reasonable height above ground level to avoid a high concentration of gas. The filtration and ventilation plant should have a properly designed system of ducts. In larger shelters the plant may be isolated from the main shelter. It should be possible to operate the plant by hand in case of breakdown; the filters should be easily renewable; shut-off valves should be provided to each air intake; there should be a gas detector to indicate the presence of gas outside or of a defective filter. The filters should have as low a resistance as possible.

(Building Science Abstracts, 1939, No. 630) (DLC)

SIGNALS. See WARNING SIGNALS



## SIGNS

4691. Verwendung von Hinweisfarben im zivilen Luftschutz (The use of color signs in civilian air defense)

Frommholz

ARBEITSSCHUTZ-UNFALLVERHÜTUNG-GESUNDEHEIT (Berlin)

1940, November 15, No. 11, pp. 282-283.

On October 16, 1940, the Reich Minister of Aviation issued an order regulating the use of distinguishing signs and markers in the blackout. The signs are to be used at street crossings and safety zones, on trees, buildings and country roads, and in air raid shelters. They are to be made of quick drying paints, tar, and bitumen. The materials used must be tested, must have good weather resisting qualities, and must be serviceable for a considerable length of time. (DSG)

SOCIAL PROBLEMS. See EVACUATION - SOCIAL PROBLEMS

SPOTTERS. See FIRE SPOTTERS: RAID SPOTTERS

STREET LIGHTING. See BLACKOUT - LIGHTING - STREET LIGHTING

## STRUCTURAL PRECAUTIONS

4692. The architect and air raid precautions.

Scott, T. E.

BUILDING (London)

1937, Vol. 12, pp. 322-323.

Considering the various effects of explosive, incendiary, and gas bombs in an air attack, the problem of protection of buildings is capable of reasonable solution. For the typical multi-story building the structural measures necessary would involve: (a) The provision of a roof slab and one or more upper floor slabs capable of keeping out such incendiary bombs as might be used in large numbers; solid reinforced concrete, as thick as that in normal use, would be sufficient for this purpose. (b) The general use of framed structures, with external wall panels so fixed as to yield independently rather than to transmit damaging blast pressures to the structural framework, thereby endangering the superstructure. (c) Since the large proportion of window openings in external walls makes the latter extremely vulnerable, protection for personnel against bomb fragments

## STRUCTURAL PRECAUTIONS

could be provided by the use of thick walls for certain corridors or rooms on the lower floors, enclosing sufficient space for the occupants of the building. These enclosed spaces could readily be made gas proof, and careful planning should enable them to conform to the official recommendations for shelters without impairing their efficient use for peace time requirements.

(Building Science Abstracts, 1937, No. 2099) (DLC)

4693. The architect's part in passive air-raid defense.

Bird, E. L.

THE ARCHITECTURAL ASSOCIATION JOURNAL (London)

1937, Vol. 53, pp. 45-57.

The first and most important object of the architect is to provide protection for personnel, the second is to construct buildings resistant to bombing and usable after air raids have ceased. The first requirement implies the provision of a shelter affording maximum protection against all forms of attack, while the second involves certain considerations in construction and, to a limited extent, in planning. Of primary importance is a structure built to withstand, or limit the damage from the incendiary bomb, usually small and weighing from 2 lbs. to 60 lbs. A 2 lb. bomb can be kept out by a solid, two-way reinforced concrete slab 5 in. thick. A thickness of 18 in. should withstand the impact of a 25 lb. bomb. In existing buildings with timber roofs, a layer of 2 inches of sand or dry earth on the attic floors should confine the fire from a 2 lb. bomb to the roof space. It is probably not feasible to attempt to prevent the penetration of the high explosive bomb. A thickness of 15 ft. of reinforced concrete is required to exclude the 500 lb. semi-armour-piercing bomb. The effects of explosion can, however, be limited. Large areas of glass, which would facilitate the escape of the blast, would prevent the "tamping" effect (or confinement of the blast), thereby adding to its disruptive effect. On the other hand, solid construction tends to resist and confine the effects of the lighter bomb, particularly the splinter effects. Frame, reinforced concrete, or steel buildings are preferable to the older solid wall type, because they are more resistant to the stresses involved and also because failure of the panel fillings under blast pressure should leave the general structure more or less intact. Reference is made to the thickness of materials required to afford protection from bomb splinters. Two precautions are of importance in minimizing gas attack (1) preventing the seepage of gas

## STRUCTURAL PRECAUTIONS

into buildings by, for instance, extract ventilation systems, and (2) facilitating decontamination. With regard to shelters, no exact principles can be laid down. Complete protection can be obtained only in galleries with at least 60 ft. of earth cover, or with reinforced concrete roofs 20 ft. thick. The most satisfactory construction materials are reinforced concrete or reinforced brick.

(Building Science Abstracts, 1937, No. 1464) (DLC)

4694. ARP

THE PLUMBER AND JOURNAL OF HEATING (London)

1939, February 1, Vol. 61, No. 721, p. 23.

Asbestos-cement possesses many inherent qualities which are desirable in structures erected for the purpose of fire resistance. "Turnall" asbestos wood seems to be an adequate and inexpensive means of safeguarding property from the menace of the incendiary bomb. The construction of sound and adequate underground shelters is also important and "Turnall" building slabs (hollow construction) are a simple and effective lining for the walls and roofs of dugouts. These strong durable slabs, resistant to rot, rust, dampness, heat, and cold, will last indefinitely.

(DLC)

4695. Buildings in reinforced concrete.

Russo, Cristofors

LA INTENIERIA (Buenos Aires)

1940, June, Vol. 44, No. 6, p. 465.

The theory of reinforced concrete; the interpretation and development of the formulas for the calculation of structures subjected to simple compression, torsion, and shear. Also the method for calculation of simple bridges, reservoirs, silos, porches, earthquake-proof houses, and air raid shelters, with examples and complete calculations noted and developed in a practical form. (DLC)

4696. The concrete year book, 1940.

Faber, O. and Childs, H. L. eds.

1939, London, Concrete Publications, Ltd. Pp. 918, illus.

Contents: Cement. Concrete. Reinforcement. Shuttering. Joints. Foundations. Piling. Guniting and cementation. Granolithic floors. Design of slabs. Columns. Beams. Heat and sound insulation. Concrete roads. Loads and pressures for designing purposes. Cast stone and concrete products. Specifications. Information on air raid protection. Construction costs. Memoranda for concrete users. Bibliography of concrete and cement.



Directory of the concrete industry. Catalogue.  
(Building Science Abstracts, 1940, No. 162)

4697. Design of concrete houses with special reference to heat and sound insulation and protection against air attack.  
Rudel, M.  
ZEMENT (Berlin)  
1938, Vol. 27, pp. 23-26, diags.  
Drawings are given of the plan, elevation, and roof construction of a concrete house, the walls of which are claimed to be lighter, and have heat and sound insulation qualities equal to that of a 70 cm. thick brick wall. This construction is claimed to be resistant to incendiary bombs; a shelter, divided into three compartments, is provided in the basement.  
(Building Science Abstracts, 1938, No. 1057) (DLC)
4698. Grundlagen des Bautechnischen Luftschutzes (The fundamentals of building construction for air raid protection)  
Vieser, W.  
1935, Berlin, Zementverlag. Pp. 56, tables.  
A brief survey of air raid hazards from incendiary, high-explosive, and gas bombs, and of methods of town planning with a view to reducing such risks. This is followed by chapters devoted to recommended practice in the design and construction of air raid resistant buildings, as well as means of increasing the resistance of existing buildings.  
(Building Science Abstracts, 1935, No. 1331) (DLC)
4699. Half houses plan.  
THE ILLUSTRATED CARPENTER AND BUILDER (London)  
1941, August 1, Vol. CXXIX, No. 3337, p. 132.  
The Liverpool Housing Committee plans "half houses" to accommodate people rendered homeless by enemy action. These are single story dwellings which are to be converted after the war into two story parlor and three bedroom houses. The front walls are to be 14 in. thick and the flat roof is to be of reinforced concrete, the whole having the strength of an approved air raid shelter. (DLC)
4700. Housing protection.  
Wachtel, Curt  
TECHNICAL BULLETIN (Washington, D. C.)  
1941, October 2, pp. L3-L5.  
Housing projects should be planned with a long range view to the requirements of home defense; the measure for peacetime safety should be reasonably combined with protection

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of civilian settlements against air raids, sabotage, and other wartime destructive activities. It seems highly desirable that a model housing project be planned to exhibit all measures for air raid protection. Many factors are to be considered in such a project: materials to be used, design of structures, shelter design, layout of single houses and the settlement as a whole, communication, utilities, etc. Some of these measures are as follows: Cellars should be designed in such a way that they can easily be reinforced and adapted for use as shelters when the need arises. Communication between the basements of neighboring houses should be planned in all new structures. Interior lighting equipment should be provided with opaque upper shades to deflect the light downward and prevent direct light from falling on windows or doors. Underground cables should be protected against medium sized explosive bombs and should come from two or more power stations, or at least from two independent transformer substations. Interior wiring should not be attached to inflammable surfaces such as wood. Like underground cables, gas and water mains and also sewers should be laid as deep as possible. It is more desirable that they be installed all together in a tube or tunnel, where they are easily accessible for repair work. Frequent shut-off valves prevent the flooding of the tunnels in case of an accident. Windows and doors should conform to the strictest requirements for fire protection under air raid conditions. Iron shutters, sprays forming water curtains, shatterproof and fire resistant glass, and other means and devices are recommended. Between the windows of different floors there should be a fireproof area of at least 40 in. The lay-out of the settlement should be so planned that it is most favorable to camouflage, blackout, natural ventilation, communication, transportation, and first aid. Roof gardens, natural or artificial parks, hills, and other geographical conditions can be exploited for camouflage. Much can be done to make floors and roofs, walls, stairs and elevator shafts, sidewalk elevators, coal chutes, attics, and other parts of houses as resistant as possible to bomb explosion and to fire. (DLC)

.4701. Luftschutzarbeiten im Hochbau (Air raid protection in building construction)

Klatte, H.

1935, Potsdam, Ludwig Vöggenreiter Verlag. Pp. 41.

This booklet, approved by the president of the State Air

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Raid Protection League (Reichsluftschutzbund) is a summary of recommended structural methods for reducing the vulnerability of buildings to attack from the air - divided into three main sections. The first section deals with preliminary work, air raid protection from the builder's point of view, steps to be taken in case of new, and the alteration of existing buildings, relevant regulations, and the nature and extent of the protective measures necessary. The second section is devoted to an outline of the principles of design of structural elements; floors; girders (to be short span; support to be the full wall thickness; to be anchored to the walls); openings in walls (methods of strengthening); masonry (only solid types of wall construction to be used; reinforced concrete or reinforced brickwork with cement lime mortar; particular attention to be paid to masonry joints); facades (methods of stiffening); timber joints (methods of stiffening); cellar (the floor above should be of reinforced concrete and the cellar subdivided into small rooms). Other details. The third section deals with the cost of protective measures.

(Building Science Abstracts, 1937, No. 893) (DLC)

4702. Measures of defense against aerial attack.

THE AMERICAN CITY (New York)

1941, July, Vol. LVI, No. 7, pp. 85-87, diagrs., table.

Protection of buildings and of utilities and industrial plants. A comparison of buildings shows the wall-bearing structure to be less safe from bombing than the framed buildings of steel or reinforced concrete construction. Sandbag barricades give some protection to wall-bearing structures. Frame, instead of steel or reinforced concrete, is preferably chosen in the design of new buildings specifically to resist bombing effects. Certain plans should be made by utility organizations in regions where attack is likely. (DLC)

4703. Merkblätter für die baulichen Luftschutz-Massnahmen (Memoranda for aid raid protection in building)

Bendel, L.

1937? Berne, Hallweg. Pp. 23.

A review of the measures required for the protection of buildings from air attack based on a study of the experiences



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of, and measures adopted in, various countries. Divergence of opinion obtains, and it is thought that the existing methods of passive defense are not likely to be entirely successful. Consideration is given to reducing the impact and incendiary effects of incendiary bombs by a suitable form of roof, the provision of a massive fire-resistant floor in the attic story and the fire proofing of combustible material. A chapter deals with explosive bombs, the calculation of their impact energy, depth of penetration, explosive effects, positive and negative air pressures, and vibrations. Methods of construction have been developed for preventing the penetration of explosive bombs into buildings. Reduction of the effects of air pressure and suction is obtained by increasing the rigidity of a building by means of rigid connections between floor and wall, floor and column, and between stories. This is best realized by the use of monolithic reinforced concrete. In planning reinforced concrete structures from the standpoint of air attack, certain particular requirements need consideration. Columns along the length of the building should be closely spaced so as to obtain the necessary lateral rigidity; the walls should have narrow mesh and two way reinforcements. Mushroom floors are the most stable, and are suitable for floors over cellars serving as shelters. Special care must be given to foundations to reduce the risk of damage caused by vibration; in the case of important buildings, the nature of the soil must be carefully studied. For buildings on cohesive soil, through which vibrations are easily transmitted, pile foundations-firmly connected to the structure-are recommended. The protection of existing buildings from explosive bombs can be provided only at high cost. The following general conclusions are reached: There are no constructive measures which should ensure complete protection from bombs falling directly on a building. For protection of existing buildings and for new buildings, reinforced concrete is a suitable material on account of its elastic and fire resistant properties and the rigidity of monolithic reinforced concrete. Effective protection from incendiary bombs and the detonation effects of explosive bombs can be provided at a low additional cost.

(Building Science Abstracts, 1937, No. 1085) (DLC)

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4704. Non timber houses for Liverpool City Council.

Keay, L. H.

THE BUILDER (London)

1940, Vol. 158, p. 508.

Details are given of the materials used in the construction of non-parlor type brick cottages in which only a negligible amount of timber is used per cottage. The ground floor consists of a concrete raft laid on the solid earth, while the first floor is constructed of pre-cast concrete beams spanning between partitions or carried on steel joints with reinforced concrete beams between longer spans. The stairs comprise pre-cast concrete units, with either linoleum treads or with eyes cast in for stair rods. An air raid shelter is provided in the entries between houses, and entrances to these shelters are protected by a brick traverse at the rear of the houses and by a hinged steel door or other suitable baffle at the front.

(Building Science Abstracts, 1940, No. 3550 (DLC))

4705. Planning industrial buildings for air raid protection.

Lofken

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1937, pp. 85-89.

In future planning and construction of industrial buildings and in reconstruction of existing buildings consideration must be given to safety from air attack. Of importance for the protection of industry is the distribution of the total production throughout the country and the restriction of the size of individual plant and industries in any one locality. When planning new buildings or extensions of existing buildings it must be ascertained whether their presence might increase the danger of attack for other industrial buildings in the neighborhood. Sites should be selected in positions where the buildings would not be easily detected from the air. Industrial and residential districts must be kept separate. New housing settlements should not be located near important industrial buildings. Numerous small buildings, far apart, are to be preferred to a few large buildings. In planning industrial processes, the work should be subdivided into several processes each complete in itself; in that way interruption of the work as a whole by air attack could be avoided. Consideration is given generally to methods of construction, to the provision of shelters for works' staff, protection of essential services, and camouflage; to the protection of

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housing settlements by adoption of open planning and the provision of shelters, etc.

(Building Science Abstracts, 1937, No. 2486) (DLC)

4706. Protected spine construction.

Davey, N.

ROYAL INSTITUTE OF BRITISH ARCHITECTS. Journal (London)

1939, Vol. 46, pp. 334-36.

The principle of construction suggested is designed to fulfill three purposes: to remain stable during an aerial attack, to afford adequate protection to its occupants, and to be readily repaired. The central spine, or stem, has a dual function, providing a protected area for accommodating all services within it, and also carrying the whole load of the superstructure. It supports the protective floors which are built monolithically with it, and is capped by detonating and protecting slabs. The protective floors are thick enough to resist the penetration of incendiary bombs and strong enough to support the weight of the floors above in the event of collapse of the upper portion of the building; the intermediate floors can be of lighter construction. The external walls are non-load bearing and are also of lighter construction, their main purpose being to afford protection from the weather. The strength of the building is concentrated in the central spine. Each floor has its own protected area, into which the occupants could move in an emergency. To damage such a building irreparably the central spine, which is of comparatively small area, would have to be demolished by a series of direct hits. Renovation work is facilitated by the existence of this central spine. The rigidity of the building is greatly increased by allowing the partition walls - which are built monolithically with floors, and which extend outwards from the core - to act as supporting ribs or fins. The principle can be readily applied to many types of buildings, such as hotels, offices, flats, clinics, and hospitals. Its outstanding advantages are: it affords immediate protection on all floors; all vital services are accommodated and maintained within the protected spine; the strength of the building is centered around the protected spine, which offers a comparatively small target; the possibilities of complete collapse are reduced to a minimum, and the work of clearing debris rendered more safe and easy; the spine forms a nucleus around which the work of renovation could proceed more quickly and more cheaply; there is no sacrifice of peace-time efficiency.

(Building Science Abstracts, 1939, No. 876) (DLC)



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4707. Protection from air attack in building.

Lofken.

ZENTRALBLATT DER BAUVERWALTUNG VERBINGT MIT ZEITSCHRIFT FÜR BAU-  
WESEN (Berlin)

1936, Vol. 56, pp. 321-28.

Necessary measures for protection from air attack include open planning of districts and buildings. The selection of sites, design of new, and reconstruction of existing buildings should be considered from that standpoint. Densely built residential areas in towns are to be avoided; buildings should be in rows, with sufficient space between blocks, and side wings eliminated; open spaces and wide streets in residential areas are necessary. Industrial and residential quarters should be separate, and hospitals, etc. should be located in the outskirts of towns. Suitable distribution and location of industries and decentralization are essential. From the point of view of safety from exploding bombs, frame structures are recommended; the floors should be designed as stiffening slabs and connections capable of resisting bending should be provided between floor and frame, so that forces causing tension, compression, and bending are transmitted to the frame. In other cases the building can be strengthened by improving the brickwork, anchoring floors to external and internal bearing walls, and by the use of stiffening solid floors. Protection from incendiary bombs should include the use of noninflammable materials, of suitable roof covering and attic floor construction to exclude bombs. Materials which can be easily rid of poison gas, etc. are essential.

(Building Science Abstracts, 1936, No. 968) (DLC)

4708. The protection of buildings to reduce the risk of fire during air raids.

Kohsan

DER BAUTENSCHUTZ (Berlin)

1936, Vol. 7, pp. 49-56.

The author considers questions of the prevention and extinction of fires in buildings. Reference is made to the recent revision of the German building regulations respecting fire-retarding and fire resistant methods of construction. It has become necessary, in view of the increased requirements, to reconsider the efficiency of types of structure hitherto regarded, without special evidence,

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as fire-retardant or fireproof, for example, hollow block concrete floors. It is to be questioned whether such floors - as well as the cover to reinforcement required by the existing reinforced concrete specification - satisfy the present regulations. Of great importance is the localization of a fire. Open planning and unbuilt spaces are important means to that end. The question arises whether the present regulations for fire walls meet the requirements of protection from air raids. In the case of fire in attics, especially with a strong wind, it has frequently been found that the fire wall continued to a height of 26 cm. above the roof is not sufficiently effective to prevent the spread of fire. It would be necessary to increase the height to 50 cm. for blocks of flats, factories, etc., four stories high or more, if the roofs of the neighboring buildings are at the same or approximately the same height. Openings in fire walls - e.g. for service pipes - must, in principle, be regarded as hazardous. They may, however, be required for access to air raid shelters but in that case should be so constructed that their stability and strength are not endangered, and should be closed by fireproof doors. Fire partitions dividing buildings into sections to facilitate localization of a fire will hereafter be required, though, hitherto, in buildings having fire resistant floors and walls they have frequently been omitted. Opinion is divided as to the most suitable shape of the roof. It has been suggested that steep roofs should be avoided, owing to the possibility of incendiary bombs glancing off and penetrating the lower stories of neighboring buildings; bombs may be allowed to penetrate the attic, which should have a safety floor to protect the lower stories. This is probably the most suitable method of protecting existing buildings, but in special cases a bomb-proof roof will also be necessary. A fireproof floor for the purpose of protection from air raids must be sufficiently resistant to fire in the upper surface and also resistant to impact. Monolithic concrete or reinforced concrete floors would prove more resistant than other types of fireproof floor, e.g. hollow block floors in which blocks could be easily dislodged. Where a new floor construction is not possible, the existing attic floor can be protected by a covering of non-combustible material; a calcium sulphate plaster or a cement surfacing may also be used.

(Building Science Abstracts, 1937, No. 412) (DLC)

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4709. Protezione dei fabbricati degli attacchi aerei con parti colare riguardo alle applicazioni del cemento armato (Protection of buildings against air attacks with special reference to the use of reinforced concrete)

Stellingwerff, G.

1936. Milan, Ulrico Hoepli. Pp. 189, illus. tables.

Part I. Probable forms of attack. (1) Principal means of attack. (2) Various types of projectiles. (3) Effects (penetration and explosion of projectiles). Part II. Protection. (1) Protective measures in general. (2) Resistance to penetration and explosion. Part III. Principles of construction. (1) General. (2) Adaptation of existing buildings. (3) Protection of gas, water, and other mains. Part IV. Shelters. (1) Protection against explosion. (2) Protection against toxic gases. (3) Examples. Part V. Local regulations. Part VI. Proposed schemes - The construction of shelters in various buildings.

(Building Science Abstracts, 1937, No. 1084) (DLC)

4710. Schutzräume in Stadt und Land (Air raid shelters in the city and country).

TECHNISCHES GEMEINDEBLATT (Berlin)

1936, December 10, Vol. 39, No. 12, pp. 276-281.

A general belief has existed for some time that the population should prepare for air attacks in offices, homes, schools, and other public buildings. To do this, technical constructive measures must be taken against the effects of high explosive bombs, incendiaries, splinter bombs, and gas bombs. A special effort is made for preparing safety rooms for those in schools, and in city and community buildings. The shelter rooms must be strong enough to withstand the effects of prolonged bombing. A building specially prepared for such an emergency should have an iron or cement roof. Its floors and walls should be increased in thickness with durable absorbing material (as steel, concrete, iron, and wirenetting). The top floor or attic should be provided with sand and other fire extinguishing materials and apparatus. Basements and cellars can be converted into air raid shelters by use of massive overhead beams and strong wooden or steel supports for the sides. Iron, concrete, steel, and wood are used in the construction of tunnel shelters. (DSG)



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4711. Some principles of protection in air raids.

Hill, E. F. J.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS. JOURNAL (London)  
1937, Vol. 63, pp. 1662-1772.

Following a brief outline of the activities of the Air Raid Precautions Department of the Home Office and of the probable nature of future bombardment from the air, consideration is given to the characteristics and effects of incendiary, gas, and high explosive bombs. With regard to the location of shelters in the buildings, it is thought that below ground accommodation is best, largely owing to the greater degree of lateral protection. Where such shelters are unavoidably below the level of the water mains or sewers, they should be constructed as tanks with entrances above flood level. Shelters on upper floors generally should not be lower than the second floor and should have a minimum cover of two floors and the roof of the building. Shelters should not be adjacent to internal courts or light wells; nor should they be immediately below large water-tanks, safes, or heavy machinery which might be dislodged by a bomb. They should have at least two entrances provided with gas locks and, if below ground, with an exit to the air. Suggestions are made with regard to the equipment of shelters, including lavatory accommodation, and the provision of drinking water and fire extinguishers. Multi-story steel or reinforced concrete framed buildings are the most suitable type for containing shelters; they should be of fire resistant construction with solid concrete floors, roofs, cross walls, and partitions. Disadvantageous features in connection with the provision of internal shelters are (1) large proportion of voids to solids in external walls, (2) floors with no partitions between external walls, (3) timber floors or roofs, or roofs of weak construction, (4) buildings with low lateral strength, (5) roof lights with horizontal or sloping glazing, (6) heavy objects such as tanks, safes, and machinery on upper floors, (7) high chimneys and parapets or heavy architectural features, (8) buildings in which the occupancy involves abnormal fire risks, and (9) enclosed courts or light-wells. Single story buildings with no partitions

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between external walls are definitely dangerous and should be evacuated during an air attack. Descriptions are given of the design and operation of two systems, in one of which air is drawn in through a gas filter, and in the other no air is drawn in, but the air within the shelter is chemically regenerated. Where protection for personnel is not available in a building, satisfactory protection can be obtained in revetted shelter trenches, 7 ft. deep and 2 ft. wide, with recesses for the accommodation of, say, 10 seated people. Some consideration is also given to the protection of buildings such as power houses, hospitals and telephone exchanges, and to the protection of machinery in large industrial buildings.

(Building Science Abstracts, 1937, No. 1083) (DLC)

4712. Steel construction and air raid protection.

Thier, K.

DEUTSCHE BAUZEITUNG (Berlin)

1935, Vol. 69, pp. 227.

Careful preliminary consideration is necessary where it is proposed to strengthen a reinforced concrete floor over a cellar to be used as a shelter, by additional steel, wood or brick columns. An example is given of a floor supported by a brick column. The freely supported beam then becomes a continuous beam with two panels. A negative moment occurs around the column, and shearing stresses are set up to the right and left of the column. The floor as originally designed is not reinforced to withstand these effects, with the result that the stability of the building under normal conditions is endangered. The case is then considered of the same floor beam supported by two columns; again there are negative moments at the columns and shearing stresses which the structure is not designed to withstand. Where the floor, so supported, is subjected to stressing by a load of debris and has additional support consisting of temporary wooden props placed under the floor panels, the stressing due to the debris would take effect on the beam to a width corresponding only to the compression flange. The reinforcement would again be insufficient to allow the structure to withstand the negative moment. Failure of the floor would result; cracks would appear in the upper surface

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of the beam above the column and in the lower surface to the right and left of the column, and the column would buckle under eccentric loading. Without the column the beams in question would have been stressed under the load of debris in excess of the additional stress to be allowed for the weight of debris but would not have failed.

(Building Science Abstract, 1937, No. 2344) (DLC)

4713. Steel for ARP. Air raid precautions: constructional hints.  
The British Steelwork Association.

1938, London, The Association. Pp. 44, illus.

Standardized steel products and special steel constructions are described and illustrated for use as means of protection against air attack. Where new buildings are under consideration the steel frame method of construction is advocated because of the capacity of these structures to withstand tensile, compressive, shear, and bending forces, with less danger of collapse. In multi-story buildings, floor construction plays an important part in offering resistance to explosive, incendiary, and gas bombs; and suitable floor systems, with constructional details of filler joist floors, troughed concrete floor sections, composite steel beam, dovetailed sheet floors, and buckle plated roofs and floors, are illustrated. Steel roof construction also provides greater resistance to incendiary bombs, and where wooden roofs and rafters are employed, a lining of galvanized steel sheets will render them more fire-resistant. Shelter in existing buildings is facilitated by the use of steel columns and beams with sheet steel centering and concrete infillings. Examples of this type to accommodate 50 persons in basements - are described and illustrated and the weights of debris which they may have to carry in the event of demolition of the top part of the building are given as a guide to the necessary design. For the protection of factory personnel and the civil population, independent shelters and trenches may be constructed, in which steel mine arches, in conjunction with corrugated sheet coverings, are used to advantage. Shelters under road or railway embankments or where tunnelling into hill sides is possible, can also be installed by this method of construction.

(Building Science Abstracts, 1939, No. 331 (DLC))



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4714. The steel roof as protection from air attack.

Schössberger, H.

DER BAUINGENIEUR- ZEITSCHRIFT FÜR DAS GESAMTEBAUWESEN (Berlin)  
1936, Vol. 17, pp. 63-64.

Fire damage from incendiary bombs may be reduced by the use of steel roof covering. It is suggested that the attic floor of buildings should be constructed as a stiffening fire floor. In that way it might be possible to restrict fire to that story. The floor should be strong enough to prevent the penetration of bombs, of falling burning beams, etc. A steel roof is not corroded by, and does not absorb, mustard gas, which can be removed simply by washing.

(Building Science Abstracts, 1939, No. 797) (DLC)

4715. Structural precautions and shelter protection in air raids.INSTITUTION OF MUNICIPAL AND COUNTY ENGINEER. JOURNAL (London)  
1938, June 21, Vol. LXV, No. 1, pp. 32-35.

The three types of bombs used in the present war are high explosive, gas, and incendiary bombs. The weight of an incendiary bomb varies from 1 kilo to 60 lbs. To prevent this type of bomb from penetrating a light roof, reinforced concrete 4 to 6 ins. in thickness is being used. Respirators are used as a protection against gas. High explosive bombs, weighing from 20 to 2,000 lbs. may be used to do personal and material damage. For protection against high explosives, concrete with a thickness of 12 to 15 ft. and 60 - 70 ft. of earth can be used. 13½ ins. of brickwork, 1 ft. of reinforced concrete, 1½ in. of steel and 2 ft. 6 in. of earth or sand will resist penetration by splinters. For protection against light incendiary bombs it is required to have a wall thickness of 15 in., provided that the incendiary bomb is not over 25 lbs. The most suitable type of shelter for protection against air raids is "multi-story steel framed or reinforced concrete type of building." Some structures can be built in the open. This type of structure is used to protect persons working in factories. (DLC)

4716. Wartime building technique.

Lucas, Edgar

THE ILLUSTRATED CARPENTER AND BUILDER (London)

1941, August 1, Vol. CXXIX, No. 3337, pp. 115-117, illus.

Gantries are temporary working platforms, towers and frames of squared timber for the purpose of supporting heavy loads. There are tower gantries for supporting

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derrick cranes, but this article deals chiefly with fixed gantries, which are necessary in demolishing bomb-damaged buildings. Gantries consist of a structure of posts, sills, load struts, and braces. Planking and joists are needed for the working platform. (DLC)

4717. Wartime building technique.

Lucas, Edgar

THE ILLUSTRATED CARPENTER AND BUILDER (London)

1941, August 8, Vol. CXXIX, No. 3538, pp. 148-152, diagsr.

Methods of excavation for such wartime jobs as trenching, air raid shelters, and rescue work. Precautions to be taken with various types of soil: firm sand and sandy gravel, gravel, clay and chalk. Type of timbering required for each type of soil. Methods of sinking shafts for emergencies such as repair of damaged sewers and water mains or removal of unexploded bombs. (DLC)

4718. Wartime building bulletin 1. Economical type designs in structural steel work for single story factories.

Great Britain. Department of Scientific and Industrial Research.  
1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/--30¢)

4719. Wartime building bulletin 2. The application of reinforced concrete to wartime building.

Great Britain. Department of Scientific and Industrial Research.  
1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 6d. 15¢)

4720. Wartime building bulletin 3. Type designs for small huts.

Great Britain. Department of Scientific and Industrial Research.  
1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/-30¢)

4721. Wartime building bulletin 4. Supplementary type designs in structural steelwork for single story factories.

Great Britain. Department of Scientific and Industrial Research  
1940? London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/-30¢)

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4722. Wartime building bulletin 5. Economical type designs in reinforced concrete for single story factories.  
Great Britain. Department of Scientific and Industrial Research.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/-30¢)
4723. Wartime building bulletin 7. House construction.  
Great Britain. Department of Scientific and Industrial Research.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/-30¢)
4724. Wartime building bulletin 8. Part 1A - Walls for factory buildings; part 1B - Columns for factory buildings. Part 2 - Tubular steel, trusses, and purlins for factory buildings. Part 3 - A system of heating for wartime factories.  
Great Britain. Department of Scientific and Industrial Research.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/-30¢)
4725. Wartime building bulletin 9. Conservation of cement and of clay bricks.  
Great Britain. Department of Scientific and Industrial Research.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/-30¢)
4726. Wartime building bulletin 10. General principles of wartime building.  
Great Britain. Department of Scientific and Industrial Research.  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/-30¢)
4727. Wartime building bulletin 11. Precautions for concreting and brick-laying in cold weather.  
Great Britain. Department of Scientific and Industrial Research  
1940? London, H. M. Stationery Office.  
(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 1/-30¢)



## TOWN PLANNING

4728. The design of blocks as affected by air raid protection. Town planning with regard to air raid protection, traffic and open planning.

Harting, W.

BAUWELT (Berlin)

1937, Vol. 28, pp. 1135-42, diags. plans.

When taking into consideration the possibility of attack by gas bombs, it is important to plan streets so as to facilitate the dispersion of gas by wind. The planning of a series of streets to run in a north-south direction is not advantageous. It has been found that the zone of greatest danger in a gas infected district is up to a height of 3 meters above ground level. The danger from gas to occupants of the ground floor of buildings would not be influenced by the aspect of the building, nor could it be prevented by leaving spaces between blocks of buildings. It is suggested that the most effective provision for dispersion of gas would be to design blocks of buildings so that the lowest part of the structure is an open space in the form of an arcade about 2.80 meters high. This type of structure is also of advantage from the standpoint of protection from explosive and incendiary bombs. Photographs of a model of a continuous block of flats designed with a series of arcades, and plans and diagrams indicating details of construction are shown.

(Building Science Abstracts, 1938, No. 1053) (DLC)

4729. Defensive town planning.

Bernard, O. P.

BUILDING (London)

1938, Vol. 13, pp. 349-351.

Since air attack exposes ground floors to especial danger, buildings should be erected on "stilts". A Berlin architect, Harting, has proposed methods of which illustrations are given. Buildings designed on this principle would, it is claimed, facilitate the dispersal of gas, neutralize blast and concussion from high explosives, diminish the danger from incendiary bombs, and afford extensive air-raid refuges, so that a city's inhabitants could leave its streets within a few seconds. Defense planning, it is concluded, should be in accordance with the following regulations: (1) in closely built areas the streets shall not run transversely to the prevailing wind. (2) Rows of buildings shall be interrupted at suitable intervals. (3) Residential districts shall be kept suitably open. (4) Ground floors in built-up

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areas shall be raised not less than 10 ft. 6 in. above the ground, and the subjacent space shall contain only necessary stairways, or a few shops or offices. (5) Building schemes, particularly at foci of human congregation, such as markets, traffic centers, etc., shall incorporate public refuges. (6) Power stations, gas works, etc., shall be so disguised as to render their identification difficult from the air.

(Building Science Abstracts, 1938, No. 1858,.) (DLC)

4730. Protection from air attack and town planning.

Wolf, P.

ZENTRALBLATT DER BAUVERWALTUNG VEREINGT MIT ZEITSCHRIFT FÜR BAUWESEN

1935, Vol. 55, pp. 21-30, illus., plans.

Study of the existing literature on town planning and protection from air attack shows that certain fundamental requirements are advocated by the majority of writers. These include the spacing of the business, residential, and industrial quarters on the basis of suitable densities of occupation and of building, special consideration being given to fire hazards; the provision of open spaces, including water surfaces, in all parts of a town; the planning of towns and individual buildings zones so as to allow the greatest possible access of air; suitable constructional methods to counterbalance the increased danger from fire; the location of industries and of workers' living accommodation on the outskirts of a town or in the country; the protection of main railway stations and the removal of freight yards, etc., to the outskirts; decentralization of the essential services; public offices and public buildings, such as theatres, schools, etc., not be grouped together and to be located as far as possible from parts of a town particularly liable to attack; hospitals and similar institutions to be situated at the outskirts; streets to be sufficiently wide, especially in the busiest quarters, to allow freedom of movement to and from the most densely built localities; air raid shelters of suitable size to be provided for houses, factories, etc., existing underground structures to be used as far as possible. The Dresden Building Authorities (Hochbauverwaltung der Stadt, Dresden) have studied the circulation of air about buildings arranged in different formations. The conclusion was reached that gas may most easily be dispersed where houses are in rows so arranged that the least prevalent wind blows at right angles to the rows. The hazard of the spread of fire started by incendiary bombs is

## TOWN PLANNING

increased, however, where air circulation is good, and must be reduced by suitable means of construction, and by careful placing of houses with regard to each other. Very tall buildings have the advantage that, owing to their height, they are less vulnerable generally to the effects of gas attack.

(Building Science Abstracts, 1935, No. 494) (DLC)

4731. Urgent need in town planning from the standpoint of protection from air attack.

Heinicke, E.

GASSCHUTZ UND LUFTSCHUTZ (Berlin)

1938, Vol. 8, pp. 25-30.

Data on the distribution of population in large towns in Germany is shown, and a detailed analysis is made of conditions in Berlin. Consideration is given to means of reducing the existing building and population densities, which are too high, and to the need for definite regulations as to the size and distribution of open spaces. An outline is given of various legal measures which would be necessary to allow any scheme of town planning (from the standpoint of air raid protection) to be carried through without difficulties due to ownership of land and other possible obstacles.

(Building Science Abstracts, 1958, No. 1690) (DLC)

TRADE. See COMMERCE AND INDUSTRY

TRAFFIC HAZARDS. See BLACKOUT, TRAFFIC HAZARDS.

## TRANSPORTATION

4732. Cars in private garages.

THE WORLD'S CARRIERS (London)

1941, March 15, Vol XXXVII, p. 118.

Any car left in the garage should have front wheels in straight line with those in the rear, and, instead of applying the hand brake, the wheels should be wedged with a brick or a small piece of wood, so that should incendiaries set the place afire no time would be lost in removing the vehicle. (DLC)



## TRANSPORTATION

4733. Controlling tram car flashes.  
THE TRANSPORT WORLD (London)  
 1941, May 8, Vol. LXXXIX, No. 2858, p. 200, illus.  
 A "rewiring pan" has been invented to minimize the flashing occurring at tramway terminal points (Edinburg Corporation Transport Department). It is visible on the blackest nights and greatly reduces the flashes when contacts are being reestablished. (DLC)
4734. If the invader comes - plans for immobilizing vehicles.  
MOTOR TRANSPORT (London)  
 1941, April 19, Vol. LXXII, No. 1884, p. 3  
 Special instructions issued by the Ministry of Transport to owners of vehicles, in the event of invasion: (1) remove distributor heads and leads, and empty tanks or remove carburetors; if engine is a diesel, remove injection pumps and connection. (2) Hide parts removed well away from vehicle. (3) Owners of garages and large fleets of vehicles must remove from a specified area stocks of spare parts, or parts taken from their vehicles. (DLC)
4735. Organization of road transport for a defence emergency. Good vehicles.  
 Great Britain. Ministry of Transport.  
 1940? London, H. M. Stationery Office.  
 (Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 4d-10¢)
4736. Protecting bus passengers in air raids.  
 Lowe, W. J.  
WORLD'S CARRIERS (Victoria, England)  
 1941, January 15, Vol. XXXVII, No. 436, p. 77.  
 Instructions by an official of Associated Road Operators to drivers of passenger busses in regard to the protection of riders, against flying glass splinters from windows broken in an air raid. To this end, the fabric net system of window protection should be adopted, with operator being required to make small openings or "peep holes" in the material at each window for the occupants of the vehicle. (DPR)

## TRANSPORTATION

4737. Running trains during air raids.THE RAILWAY GAZETTE (London)

1939, November, Vol. 71, No. 20, p. 749.

Immediately upon an air raid warning, all trains are stopped at the first signal box or passenger station so that the engineers and guards can be advised. Passengers are warned and given the choice of remaining on the train or of alighting and dispersing. A sharp lookout for damage and obstruction is kept. The railway men are fully trained in ambulance and ARP duties. (DLC)

4738. Das Verhalten des Publikums bei Luftangriffen in Eisenbahnen und auf Bahnhöfen (Control of the public during an air raid on railroads and railway stations)

Gebele, H.

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT (Munich)

1936, February 21, Vol. 83, No. 8, p. 333.

The conduct of persons during an air raid on trains and in railway stations is prescribed in a set of rules formulated by the German railroad company. Alarms will be given by means of telephones and visual signals. All passengers must leave the station platform. Passenger trains will not be permitted to run. The passenger coaches provide a reasonable amount of protection against effects of splinter bombs. During a blackout rigid rules for use of light, including flashlights and kerosene lamps, will be enforced. Railway station entrances will be kept closed to the public. Only employees will be permitted to pass in and out. In large cities the passengers at railway stations may find safety in nearby public shelters. (DSG)

4739. What to do in air raids.MOTOR TRANSPORT (London)

1940, October 5, Vol. LXI, No. 1856, p. 10.

Full information for drivers as to what to do during air raids is issued by London Association on a handy card with instructions covering 8 items, some of which are: (1) all orders of civil or military authorities must be obeyed, (2) take care always to see that all lights are properly masked, (3) if carrying inflammable goods or explosives, take all possible precautions for the safety of nearby persons or property; if possible, park vehicle in open space away from the highway. (DPR)

TUNNEL SHELTERS. See SHELTERS, TUNNEL

UTILITIES. See PUBLIC UTILITIES

VETERINARIES. See ANIMALS

VOLUNTEERS. See PERSONNEL

## WAR DAMAGE

4740. After a blitz  
BUSINESS (London)

1941, June, Vol. LXXI, No. 6, p. 18.

In order to establish a nation-wide scheme for dealing with "blitzed" property, powers had to be given to local borough councils, county councils, the Ministry of Home Security, and the military authorities. Any building smashed by a bomb belongs to the government, not to the original owners. The local council acts as disposal agent for the government. Nothing should be removed from a blitzed building unless in danger of destruction, except with the approval, and under the supervision, of a government official, and then a careful list of all salvaged property must be kept. Building materials are roughly divided into 7 groups. Only two of these seven may be considered as being sources of profit from salvage. The cost of demolition and removal of the other 5 types more than absorbs their value. (DLC)

## WAR DAMAGES, COMPENSATION

4741. Practical aspects of war damage.  
LAW JOURNAL (London)

1940, July 15, Vol. 89, p. 277.

An outline of laws relating to compensation for damage to land and houses, to chattels and for personal injuries resulting from enemy action. (DLC)

4742. War damage act: immovable property  
THE LAW TIMES (London)

1941, April 19, Vol. 191, No. 5116, pp. 189-190.

The War Damage Act of March 26, 1941, consists of 102



## WAR DAMAGE, COMPENSATION

sections and five schedules. Before it can become operative it will have to be supplemented by a number of regulations. The Act is divided into four parts dealing with buildings, with other movable property or goods; with amendments to the War Risks Insurance Act of 1939, and with other miscellaneous and general provisions. Further provisions are to be made for persons entitled to receive payments; the necessary funds to be obtained by a levy on all properties, and for immediate payment for first-aid repairs. This should solve the problem of War Damage and provide for rebuilding after the war. (DLC)

4743. War damage act, 1941. Official memoranda.

ESTATE MAGAZINE (Letchworth Herts, Eng.)

1941, June, Vol. 41, pp. 281-93.

Gives the text of two documents, the first of which is a series of explanatory notes on Part I of the War Damage Act of 1941 supplied by the War Damage Commission; the second, a description of the new war damage insurance schemes, supplied by the Board of Trade. (DLC)

4744. War damage to property. Government compensation scheme. Final report of the Committee on the principles of assessment of damage. (Cmd. 6197)

Great Britain. Parliament.

1940, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 2d.)

## WAR DAMAGE, REPAIR

4745. Report of the Committee on the responsibility for the repair of premises damaged by hostilities.

Great Britain. Parliament.

1938, September 26, London, H. M. Stationery Office.

(Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y. 6d. 15¢)

4746. War damage to property.

King, W. J.

THE SECRETARY (Cambridge)

1939, December, Vol. XXXVI, No. 12, p. 926.

Principal recommendations of the report of the Committee on

## WAR DAMAGE \* REPAIR

the responsibility for repair of premises damaged by hostilities, implemented by the Landlord and Tenant (War Damage) Act, 1939. The following are underlying legal principles: "(1) The lessee is not relieved from his obligation to pay rent in the event of damage or destruction of leasehold property by the King's enemies or by the armed forces of the Crown. (2) Neither landlord nor tenant is relieved from his obligations to perform a covenant to repair - which will, when the damage is extensive enough to require it, extend to the complete rebuilding of the premises. (3) Where a lessee has a specific covenant by his landlord to repair he cannot compel performance, nor does failure to repair by a landlord in accordance with this covenant absolve the tenant from liability for rent or entitle him to quit, the tenant's recourse being an action for damages for the breach. (4) The general rule is that in the absence of a covenant the lessor is under no obligation to repair, there is no obligation on either party to repair or rebuild in the event of damages or destruction by enemy action." (DLC)

## WAR INJURY (CIVILIAN), COMPENSATION

4747. Air raid casualties.

THE BRITISH MEDICAL JOURNAL (London)

1940, April 20, Vol. 1, No. 4137, p. 60

Persons claiming injury allowances under the Personal Injuries Scheme, 1939, are required to submit special war injury certificates. Books of certificates were issued to local practitioners before the outbreak of the war and are to be distributed to persons suffering from injuries by enemy attack and to civil defense volunteers injured in line of duty. The council has given general approval to arrangements made by the Ministry of Health for the establishment, on a temporary basis, of a domiciliary medical service for civilians injured as a result of the above actions. (DSG)

4748. Personal injuries in air raids.

BUSINESS (London)

1941, May, Vol. LXXI, No. 5, p. 21.

Under the new personal injuries scheme, 1941, temporary injury allowance and, in cases of permanent injuries, pensions and family allowances are paid by the minister of Pensions

## WAR INJURY (CIVILIAN), COMPENSATION

to Civil Defense volunteers and to gainfully occupied persons. Civil defense volunteers injured in line of duty are given a higher rate than others injured by enemy action. A person entitled to compensation under the scheme waives compensation or damages at common law or under the Employers' Liability Act. (DLC)

## WAR RELIEF

4749. Caring for air raid victims.

THE MUNICIPAL JOURNAL (London)

1941, January 17, Vol. 49, No. 2503, p. 67.

The problem of the homeless is being solved by billeting, emergency hotels, and rehousing. First aid repairs on damaged houses are being provided for. (DLC)

4750. First aid posts as welfare centres.

THE MEDICAL OFFICER (London)

1940, February 24, Vol. 63, No. 1648, p. 67.

A scheme introduced at Kensington for using ARP first aid posts as welfare centers. Five out of eight welfare centers were closed at the outbreak of the war, when the medical and nursing staff of the Health Department engaged in civil defense duties. The need for more welfare centers is stressed. (DEC)

4751. Die Kriegsarbeit der Technischen Nothilfe in Mittel - und Klein-städten (Technical auxiliary work of the war in small and medium size cities)

Heldecke, O.

TECHNISCHES GEMEINDEBLATT (Berlin)

1940, November 10, Vol. 43, No. 11, pp. 126-128.

A discussion of the war's widespread physical effects in Poland, France, and Belgium. Evacuation from the Saar district and other sites included the movement of cattle, raw material, machines, and necessary farm implements. When the evacuees returned, they found that their homes had suffered from the effects of the cold winter. Work parties were organized to repair damages done by bombs and weather. Repairs had to be made on gas and water works, telephone lines, streets, homes, industrial buildings, bridges, and transportation facilities. Organization in the Reich over a period of one year provided a group of 100,000 auxiliary workers for: (a) services for the army, (b) protective measures for the population, such as shelters



## WAR RELIEF

and fire protection for buildings, (c) provision for care of those wounded in air raids. (DSG)

4752. The Lord Mayor's national air raid distress fund.

THE SIGNAL (London)

1941, April, Vol. XX, No. 4 p. 86.

An explanation of the purposes of the Lord Mayor's National Air Raid Distress Fund. Persons suffering distress caused by air raids are eligible for help from this fund. Supplementary donations have been made by the General Council of the Trade Union Congress. (DLC)

4753. Rest periods for air raid victims.

MENTAL HEALTH (London)

1941, January, Vol. 11, No. 1, p. 24.

The Mersyside Hospitals Council has acquired 800 additional beds in suitable rest homes, mainly in Lancashire and North Wales, for the use of people needing rest and quiet after the bombing of London. Recommendations for this service are received from general practitioners, clergymen, members of the women's voluntary services, ARP workers, and other responsible officials. If the application is approved the applicant is sent away within 48 hours. Clothing, pocket money, and railroad fare are provided where necessary. The customary three weeks stay improves the patient's general health amazingly. (DSG)

## WARNING SIGNALS

4754. DCB organizing supernet work for air raid warning and emergency flashes.

DEFENSE (Washington, D. C.)

1941, August 12, Vol. 2, No. 32, unpagged.

The Defense Communications Board outlines plans to use standard broadcasting stations for air raid warnings and emergency flashes in the event of air raids. Safeguards must be provided for continued service of the station. (DPR)

4755. Points from the papers and addresses. ARP in Catalonia.

THE ARCHITECT AND BUILDING NEWS (London)

1939, December, Vol. 160, No. 3704, pp. 256-257.

In order to limit the period of warning to a minimum it is

## WARNING SIGNALS

necessary to reduce to practically an instant the interval between the controller's decision (at the central post) to give the alarm and the sounding of the warning to the public. This may be done efficiently by connecting all the motor sirens with one central switch, operated by order of the responsible officer. Pictures and diagrams are submitted showing the effects of bombs and methods by which these effects may be minimized. (DLC)

4756. Ready made air craft warning system.

PUBLIC UTILITIES FORTNIGHTLY (Washington, D. C.)

1941, April 10, Vol. 27, p. 473.

Details of an air craft warning system worked out by air craft officers of the 9th Coast Guard District in California and officials of the Pacific Gas and Electric Company show the willingness of public utilities to cooperate in matters of national defense. By using the ready made system of the Pacific Gas and Electric Company a perfect network of communication was established and service was used successfully in aerial war games in 1939. In view of the fact that the army had no warning system of its own this civilian service is noteworthy. (DLC)

4757. Sredstva signalizatsii zhilogo doma (Alarm signals for an apartment house)

Diakonov, P. I.

KHIMIYA I OBORONA (Moscow)

1938, March, No. 3, p. 15.

Apartment and dwelling houses equipped with electricity should use as air raid signals electric bells, blinkers, sirens and every type of electric equipment available. Houses without electric equipment should use various sound signals, such as whistling, ringing of bells, banging iron bars, etc. Where possible, a room - equipped with air raid signals, bells, and horns - should be set aside, with a watchman on continual duty at the radio to pass on the air raid alarm immediately. Mock air raid alarms should periodically be practiced in order to check up on the preparedness for emergency. (DLC)

4758. Warning sirens.

THE ELECTRICAL REVIEW (London)

1940, January 19, Vol. CXXVI, No. 3243, p. 65, illus.

In cold weather exposed air raid sirens may fail to operate

## WARNING SIGNALS

because of snow choking their rotors, or because of the rotor and stator becoming wet and freezing together. Water collecting in the bottom of the rotor when stationary is likely to freeze. This trouble may be avoided by running the sirens continuously at a low speed. Drawings: fig. 1. practical speed current range, fig. 2. impedance-control circuit diagram. (DLC)

## WATER SUPPLY

4759. Durstlöschung im Luftschutzdienst (Thirst quenching in air defense service).

Dracklé, W.

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT (Leipzig)

1936, September 25, Vol. 62, No. 39, pp. 1590-1592.

Thirst decreases efficiency and cannot be disregarded as easily as hunger. In air raid shelters a sufficient water supply should be arranged for, to make for efficiency and to keep up morale. In the event the water mains are broken by bombing, the air raid warden must know the available sources of water in any part of the city. He must know which water is pure and which might be impure or contaminated with poison gas. A chart has been worked out showing amount of work, fatigue, loss of perspiration, and need for water under simulated conditions of air raid shelters during an attack. (DSG)

4760. Emergency repairs to water mains

THE ENGINEER (London)

1939, Vol. 167, p. 354.

A description is given of a means of rapidly repairing a length of water main damaged by bomb explosion. Two gland connectors are securely fixed to the ends of the broken pipe by means of set screws round the outside near the gland. A pressure joint is made between the pipe and connector by means of a rubber ring which is expanded by pulling the nuts on a circular gland plate at the end of the connector. On the connector body are mounted fire hydrants or simple hose connections. Hose can be connected for local use or used to connect with similar fittings on the other broken end of the main. Another type of connector, without hose connectors, consists of pipe lengths with gland connectors as telescopic joints, made in a range of main's sizes, the outlet end of each fitting being made in a single diameter throughout the range.

(Building Science Abstracts, 1939, No. 642) (DLC)



## WATER SUPPLY

4761. O norme potrebleniia vody v usloviakh PVO (Rationing water in relation to ARP)

Zaitsev, S. P.

VESTNIK PROTIVOVOZDUSHNOI OBORONY (Moscow)

1937, No. 1, pp. 31-33.

Under chemical warfare conditions, water consumption should be rationed since there is a danger of shortage. Sources of water supply may be poisoned, the water mains may be broken by bombs and explosives, or an excessive amount of water may be needed for extinguishing fires. The author attempts to make an estimate of the amount of water needed per capita; he calculates potable water, water for washing and cleaning, preparing food, etc. He reaches the conclusion that from 7 to 8 liters of water are used daily by each person. Several practical recommendations are presented. (DLC)

4762. The protection of waterworks from air attack.

TECHNIQUE SANITAIRE ET MUNICIPALE (Paris)

1939, Vol. 34, pp. 29-30.

Water supply may be affected by the destruction of the water works, by bombardment or by contamination. Where there are filter beds and pumping stations it would be preferable to hide them underground as it is essential that water should be available at a time when it may be specially necessary for fire extinguishing, etc. This plan might be carried out in new projects, but it is not possible for towns drawing their water supply from rivers. It is proposed that such towns be supplied by means of 400-ton lighters each capable of pumping and filtering 10,000 cubic meters per day. But in wartime a river may become very contaminated and the water unfilterable except by coagulation, which would necessitate several lighters. It would be preferable to construct auxiliary water works at a distance from centers of population, camouflaged, and capable of adding to the normal water supply. Rivers offer good targets for pollution by microbes, but otherwise the danger is not serious.

(Building Science Abstracts, 1939, No. 633) (DLC)

4763. Water works and air raid precautions.

Casso, C. W.

THE INDIAN AND EASTERN ENGINEER (London)

1939, May, Vol. LXXXIV, No. 5, p. 648.

Protection of water works against air raids is one of the most essential services to the population. The problem divides itself into many angles of which the following are

## WATER SUPPLY

treated; (1) sources of supply, stressing the importance of underground supply; (2) dispersal and protection of purification works; (3) the operation of pumping stations independent of external sources of power; (4) distribution and protection of service reservoirs; (5) methods of protecting water mains and the distribution system; (6) protection of pumping station and water works buildings.  
(DLC)

## APPENDIX A -- SERIALS CONSULTED

AIR TRAILS. NEW YORK, 1928- Monthly. 24 $\frac{1}{2}$ cm. DLC: TL.501.A554

AMALGAMATED ENGINEERS UNION MONTHLY MAGAZINE, London, 1909  
Monthly. 21 $\frac{1}{2}$ cm. DLC: HD6668.E5A4.

THE AMALGAMATED JOURNAL. Pittsburgh. Pa., 1900- weekly.  
43cm. DLC: HD6350.15A5.

THE AMERICAN CITY. NEW YORK. 1909- Monthly, 25 $\frac{1}{2}$ cm. DLC: HT101.A5

AMERICAN FORESTS, Washington, D.C. 1898. Monthly. 30cm. DLC: SD1.A552

AMERICAN LEGION. [Indianapolis], 1919- Monthly. 18cm. DLC: UA926.A5

AMERICAN MEDICAL ASSOCIATION JOURNAL. Chicago, 1883- weekly. 29 $\frac{1}{2}$ cm.  
DLC: R15.A48.

THE AMERICAN OBSERVER. Washington. D.C., 1931- weekly. 41 $\frac{1}{2}$ cm.  
DLC: A52.A3973.

THE AMERICAN OXONIAN. Mensha, Wis. 1914- Quarterly. 22 $\frac{1}{2}$ cm.  
DLC: LH1. 08A6.

AMERICAN PHARMACEUTICAL ASSOCIATION JOURNAL, Washington. D.C. 1912-  
Monthly. 25cm. DLC: RS1. A52.

ARBEITSCHUTZ-UNFALLVERHÜTUNG GEWERBEHYGIENE. Berlin. 1940-  
Monthly. 23cm. DSG.

THE ARCHITECT AND BUILDING NEWS. London. 1869- weekly. 33cm.  
DLC: NA1. A4.

THE ARCHITECTURAL ASSOCIATION JOURNAL. London, 1894- Monthly.  
DLC: NA12. A56.

ARCHIVARISCHE ZEITSCHRIFT. Munich. 1881- Annual. 25cm. DLC: D11.A7

AUTOMOBILE ENGINEER. London, 19- Monthly. 34 $\frac{1}{2}$ cm. DLC: TL1.A66.

BRITISH COLONIAL PRINTER, AND STATIONER, London. 1912- weekly,  
45 $\frac{1}{2}$ cm. DLC: Z119. B83.

BRITISH MEDICAL JOURNAL. London, 1857- weekly 27cm. DLC: R31. B93

BRITISH PLASTICS AND MOULDED PRODUCTS TRADER. London, 1929-  
Monthly, 30 $\frac{1}{2}$ cm. DLC: TP986. A1B6.

BRITISH STEEL WORK ASSOCIATION. London, 1934- 26cm. DLC: TA684.M6.



THE BUILDER.London, 1843- Weekly. 34cm. DLC: NA1.B5

BUILDING SCIENCE ABSTRACTS.London, 1928- Monthly.24 $\frac{1}{2}$ cm.  
DLC. TH1.G3.

BUSINESS.London, 1902- Monthly, 24 $\frac{1}{2}$ cm. DLC. HF5001. B9.

BUSINESS WEEK. Albany.N.Y., 1929- Weekly. 30 $\frac{1}{2}$ cm.DLC. HF5001. B89

CALVARY JOURNAL.London. 1907- Quarterly 25cm. DLC. UF1.C5.

CAMOUFLAGE; A list of references,U.S.Library of Congress,Division  
of Bibliography 1940; 27cm. DLC: Z6724. C18U6.

THE CANADIAN ENGINEER. Toronto. 1893- Monthly, 25 $\frac{1}{2}$ cm.DLC. TA1.C2

THE CANADIAN MEDICAL ASSOCIATION JOURNAL.Montreal, 1920- Monthly  
24cm. DLC: R489. O7C3.

CANADIAN TEXTILE JOURNAL.Montreal. 1940- Monthly, 30cm.DLC.TS1300.C25

THE CHEMICAL AGE.London. 1921- Weekly,32cm. DLC: TP1.C33

CHEMISTRY AND INDUSTRY. London.1882- semi-monthly,27cm.DLC. TP1.S6.

THE COMMERCIAL MOTOR.London. 1933- Weekly. 30cm. DLC: TL1.C58

THE DECORATOR.London, 1903- Monthly. 29 $\frac{1}{2}$ cm. DLC: TT300.D3

DEFENSE.Washington.D.C. 1909- semi-monthly,56 $\frac{1}{2}$ cm.DLC: HD8055.14A37

DEUTSCHE BAUZEITUNG,Berlin,1867- Weekly.32cm.DLC: TA3.D4

DEUTSCHE LUFTWACHT (LUFTWEHR).Berlin.1934,Monthly.29 $\frac{1}{2}$ cm.DLC. TL503.D42

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT,Leipzig. 1875-Weekly.33cm.DSG.

THE ECONOMIST.London. 1843-Weekly. 33cm. DLC: HG.11. E2.

THE ELECTRICAL AGE FOR WOMEN.London. 1934- Monthly. 30 $\frac{1}{2}$ cm.  
DLC: TK1. E25.

ELECTRICAL ENGINEERING,New York.1900. Monthly.31cm. DLC: TK1.A61.

ELECTRICIAL.London. 1861- Weekly, 29cm. DLC: TK1.E63

ELECTRICAL REVIEW.London, 1872- Weekly. 33cm. DLC: TK1.E44.

ELECTRICAL TRADING AND RADIO MARKETING.London. 1935- Monthly,  
30cm. DLC: TK1.E487

ELEKTROTECHNISCHE ZEITSCHRIFT, Berlin, 1880- Monthly, 39cm.  
DLC: TK3.E82.

ENGINEER, London, 1856- Weekly, 27cm. DPR.

THE ENGINEER, London, 1856- Weekly, 22cm. DLC: TAl.E5

ENGINEERS JOURNAL, Sydney, 1941- Monthly, 28cm. DLC: TAl.E557

ENGINEERING AND CONCRETE RECORD, Toronto, 1901- Weekly,  
34cm. DLC: TH1.C84.

ENGLISH MECHANICS, London, 1926- Weekly, 31 $\frac{1}{2}$ cm. DLC. Tl.E52

FIRE ENGINEERING, New York, 1922- Monthly, 30 $\frac{1}{2}$ cm. DLC. TH911.F55

FOOD FIELD REPORTER, London, 1941- Bi-weekly, 39 $\frac{1}{2}$ cm. DLC. T X341.F83.

FOOD INDUSTRY, New York, -

FOUNDRY TRADE JOURNAL, London, 1902- Weekly, 33cm. DLC: TS200.F8.

GAS JOURNAL, London, 1849- Weekly, 34 $\frac{1}{2}$ cm. DLC: TP700.J8.

GUY'S HOSPITAL, GAZETTE, London, 1872- semi-monthly 24 $\frac{1}{2}$ cm. DSG.

HEATING AND VENTILATION, New York, 1918- Monthly, 23 $\frac{1}{2}$ cm.  
DLC: TH7223. A35.

HIGHWAYS AND BRIDGES, London, 1934- Weekly, 47cm. DPR.

HOSPITALS, Chicago, 1927- Monthly, 30cm. DAPH.

I.E.S. LIGHTING REVIEW, MELBOURNE, 6 issues per year. DLC:

ILLUSTRATED CARPENTER AND BUILDER, London, 1909- Weekly, 32cm.  
DLC: NA1. 144.

INDIAN ENGINEERING, Calcutta, 1887- Weekly, 30cm. DLC: TAl.I39.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS, JOURNAL, London  
1897- Monthly, 22cm. DLC: TH7201. I62.

JOURNAL OF AVIATION MEDICINE, St. Paul, 1930- Quarterly, 25cm.  
DLC: TL555. A1.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, London, 1903- Monthly,  
24 $\frac{1}{2}$ cm. DSG.

JUSTICE OF THE PEACE, London, 1937- Weekly, 28cm. DLC: (law)

- KHIMIĬA I OBORONA (MOSCOW) 1934- 30cm. DLC: TP1 K46
- LABOR. London, 1933- Monthly. 30cm. DLC: HD4805. L32
- THE LANCET. London. 1935- Weekly, 22cm. DLC: RC100. L3
- THE LAW TIMES. London- 1872- Monthly. 26cm. DLC. (Law)
- THE LIBRARY ASSOCIATION RECORD. London, 1923, Quarterly 25cm.  
DLC: Z671. L693.
- THE LIVING AGE, NEW YORK. 1844. Weekly, 22 $\frac{1}{2}$ cm. DLC: AP2.L65
- LUFTFAHRT UND SCHULE, Berlin, 1940, Monthly, 21cm. DLC: TL570. S35
- MECHANICAL WORLD. London
- THE MEDICAL OFFICER. London, 1908- Weekly. 30 $\frac{1}{2}$ cm. DSG.
- MEDIZINISCHE KLINIK. Berlin, 1904- Weekly. 31 $\frac{1}{2}$ cm. DLC: R51.M43
- DIR MEDIZINISCHE WELT. Berlin. 1927- Weekly, 31 $\frac{1}{2}$ . DSG.
- MENTAL HEALTH. London, 1940- Quarterly. 24 $\frac{1}{2}$ cm. DSG.
- THE MILITARY ENGINEER. Washington. D.C. 1920- Bi-monthly,  
30cm. DLC: TA1. P85.
- THE MILITARY SURGEON. Washington. D.C., 1891- Monthly. 28cm.  
DLC. RD1. A7
- MODERN TRANSPORT. London. 1919- Weekly, 47 $\frac{1}{2}$ cm. DLC: HE1.M6.
- THE MOTOR, London. 1902- Weekly, 30cm. DLC: TL1.M7.
- MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT, Munich, 1854- Weekly.  
25-30cm. DSG.
- MUNICIPAL JOURNAL, London. 1893- Weekly, 32cm. DLC: TD1.M93
- THE MUSEUMS JOURNAL, London. 1902- Monthly, 22cm. DLC: AM1.M7.
- NAUKA I TEKHNIKA. Leningrad. 1923- Weekly, 19cm. DLC: AP50.N38
- NATIONAL FIRE PROTECTION ASSOCIATION. London. Quarterly. 1896- 23cm  
DLC: TH9145. N35.
- NATURE. London, 1869- Weekly, 28cm. DLC: QL.N2.



NEDERLANDSCH ARCHIEVENBLAD. (VEREENIGING VAN ARCHIVARISSEN IN NEDERLAND) 1893- Yearly. 2 5 $\frac{1}{2}$ cm. DLC: CD6011.V4.

NEW REPUBLIC, London. 1914, Weekly. 31cm. DLC: AP2. N624.

NEW STATESMAN AND NATION, London. 1913- Weekly. 34cm. DLC:AP4.N64

NIGHT AND FIRE SPOTTING, Chicester Francis. 1941-, London. 68pp. DLC: UG630.C495.

OBSHESTVENNOE PITANIE, Moscow. 1933- semi-monthly, 19cm. DLC: TB677: A104.

THE OCTAGON, Washington, D.C., 1929- Monthly, 28 $\frac{1}{2}$ cm. DLC:NA11.A453.

THE PHARMACEUTICAL JOURNAL, London, 1842- Weekly. 24 $\frac{1}{2}$ cm. DLC:RS1.P32.

THE PLUMBER AND JOURNAL OF HEATING, London. 1900- Monthly, 33 $\frac{1}{2}$ cm. DLC: TH6101.P67.

POPULAR MECHANICS MAGAZINE, Chicago. 1902- Monthly, 24 $\frac{1}{2}$ cm. DLC:AP2.P8.

PRAVDA VOSTOKA, Uzbekistan S.S.R., 1927- 26 $\frac{1}{2}$ cm. DLC. Law.

LA PRESSE MEDICALE, Paris. 1893- Bi-weekly. 37cm. DSG.

PSYCHIATRY, Baltimore. 1938- Quarterly. 26cm. DLC:RC321.P93.

PUBLIC HEALTH. New York. 1888- Monthly, 24cm. DSG.

PUBLIC WORKS. New York. 1899- Monthly. 30cm. DLC: TD1.P8.

QUARTERLY OF THE NATIONAL FIRE PROTECTION ASSOCIATION; London. 1896- Quarterly. 25cm. DLC: TH9145.N35.

THE RAILWAY GAZETTE. London, 1919- Weekly. 30cm. DLC: TF.1.R5.

REFRIGERATING ENGINEERING, New York. 1914- Monthly. 30cm. DLC:TP490.R35.

REICHS-GESUNDHEITSBLATT, Berlin. 1926- Weekly, DLC: RA264.B3.

THE RESERVE OFFICER. Washington, D.C. 1924- Monthly. 21 $\frac{1}{2}$ cm. DLC:UA23.A1R4.

REVISTA DE LA SANIDAD MILITAR, Buenos Aires. 1901. 26 $\frac{1}{2}$ cm. DSG.

REVISTA DE ESTUDIOS MILITARES. Madrid. 1932- Monthly. 23 $\frac{1}{2}$ cm. DLC: U4.S652.

REVUE GÉNÉRALE DE DROIT AÉRIEN, Paris. 1932- Quarterly, 25 $\frac{1}{2}$ cm.  
DLC: Aeronautical.

ROADS AND BRIDGES, Toronto, 1867- Monthly, 19cm. DPR.

ROADS AND ROAD CONSTRUCTION, London, 1920- Monthly, 19cm. DPR.

ROYAL ENGINEERS JOURNAL, London, 1906- Monthly, 24 $\frac{1}{2}$ cm. DLC: UG630.M17

ROYAL INSTITUTE OF BRITISH ARCHITECTS JOURNAL, London, 1893-  
Monthly, 29cm. DLC: NA12.R65.

ROYAL SANITARY INSTITUTE JOURNAL, London, 1879- Monthly, 21 $\frac{1}{2}$ cm.  
DLC: RA421.S3.

ROYAL UNITED SERVICE INSTITUTION JOURNAL, London, 1940- Quarterly  
21 $\frac{1}{2}$ cm. DLC: U1.R8.

SANTARIĬA I GIGIENA, Moscow, 1939- Monthly, 25 $\frac{1}{2}$ cm. DSG.

SCHWEIZERISCHE BAUZEITUNG, Zurich, 1883- Monthly, 32 $\frac{1}{2}$ cm. DLC: TA3.S41.

SCHOOL AND SOCIETY, New York. 1915- Weekly, 26 $\frac{1}{2}$ cm. DLC: L11.S36.

SCIENCE NEWS LETTER, Washington, D.C. 1921- Weekly, 27 $\frac{1}{2}$ cm. DLC: Q1.S76.

SHIPBUILDING & SHIPPING RECORD 1913- Weekly, 30cm. DLC: VN1.S3.

SKYSCRAPER MANAGEMENT, Chicago, 1931- Monthly, 27cm. DLC: TH1.S5.

SOTSIALISTICHESKIIĬ TRANSPORT, Moscow, 19---Monthly, 25cm. DLC: HE7.S6.

SOVETSKIIĬ MUZEĬ, Moscow, 1939- Monthly, 22cm. DLC: Document Div.

THE SPECTATOR, London. 1828- Weekly, 35 $\frac{1}{2}$ cm. DLC: AP.4.S7.

STROITEL'NAĬA PROMYSHLENNOST', Moscow, 1923- Monthly, 19 $\frac{1}{2}$ cm.  
DLC: TH4.S85

SURVEYOR, New York. 1896- Fortnightly, 30cm. DLC: HG8011.S8.

LA TECHNIQUE SANITAIRE ET MUNICIPALE, Paris, 19-- Monthly.  
DLC: TD2.73.

TECHNISCHES GEMEINDEBLATT, Berlin, 1898. Semi-Monthly. 31cm. DSG.

TECHNOLOGY REVIEW, Boston. 1899- Monthly. 25 $\frac{1}{2}$ cm. DLC: T171.M47

TEKHNIKA I VOOPUZHENIE, Moscow. 1932- Monthly (irregular) 25 $\frac{1}{2}$ cm.  
DLC: U4.T4.

TONINDUSTRIE-ZEITUNG, Berlin, 1905- 3 issues per week. 33cm.  
DLC: TP.785.T67.

TRADE AND ENGINEERING, London. 1905- Monthly. 46 $\frac{1}{2}$ cm. DLC: AP4.T45.

TRAFFIC ENGINEERING, New York. 1913 -- Monthly. 28cm. DPR.

TRANSIT JOURNAL, New York. 1888- Monthly. 30 $\frac{1}{2}$ cm. DLC: TF701.S65

TRANSPORT WORLD, London, 1901- Weekly & Monthly. 35cm. DLC: TF1.T7.

DIE UFSCHAU, Frankfort. 1897- Weekly, 30cm. DLC: AP.30.U5.

THE UNITED SERVICE REVIEW, London. 1896- Quarterly. 24 $\frac{1}{2}$ cm. DLC: U1.U6

VESTNIK PROTIVOVZDUSHNOĬ OBORONY, Moscow, 1931- Irregular. 25 $\frac{1}{2}$ cm.  
DLC: UG635: R9A18.

VOLUNTEER FIREMAN, Boston. 1933- Monthly, 28cm. DLC: TH9111.V6.

WESTERN CITY, St. Louis. 1879- Monthly, 22cm. DLC: Periodical Div.

WORLD'S CARRIERS, London. Monthly 31cm. DLC: HE1.W7.

ZEITSCHRIFT DES VEREINS DEUTSCHER INGENIEURE, Berlin. 1857- Semi-monthly. 29 $\frac{1}{2}$ cm. DLC: TA3.V5.

ZEITSCHRIFT FÜR DAS GESAMTE BAUWESEN, BERLIN, 1905- Bi-weekly  
30cm. DSG.





## APPENDIX B -- BOOKS, PAMPHLETS AND GOVERNMENT RELEASES

Anichkov, S.V., Lastochkin, P.N., Leonardov, B.K. and Likhachev, A.A. Zdravookhranenie i usloviakh khimicheskoi Oborony. PUBLIC HEALTH UNDER CONDITIONS OF CHEMICAL WARFARE. Government Medical Publishers. (Moscow) 1931. 631 p. DLC:RA577.A1A5.

Bottome, Phyllis. MANSION HOUSE OF LIBERTY. 1941. Boston, Little Brown. Pp.264p. DLC:D811.5.B66

Brighouse, Harold. LONDON FRONT. New York, N. Y. Los Angeles, California, S. French. London S. French.Itd. 37p- 1941. DLC:PR6003.R38L55

Calder, Ritchie. CARRY ON LONDON. 1941. London, English University Press. 163p. DLC:D760.8L7C3.

Campbell, Ethyle. HOW TO GET BY IN THE WAR-TIME, 1940. London, Peter Davis. 193p. DLC:DA587.C3.

Chesney, Clement H.R. THE ART OF CAMOUFLAGE. 1941. London, Robert Hall, 253p. DLC:UG449.C45.

Chichester, Francis. NIGHT AND FIRE SPOTTING. 1941. London, 68p. DLC:UG630.C495.

Civilian Defense, SUGGESTIONS FOR STATE AND LOCAL FIRE DEFENSE (Fire series, Bulletin No. 1) U.S. Advisory Committee on Fire Defense. 1941. Washington, D.C. Available at Office of Emergency Management. Washington, D. C.

Cole, Franklin P. CHRISTMAS IN COVENTRY. 1941. Boston, Baler's Plays. 23p. DLC:PN6120.C5635.

Drummond, Ruth. A WOMEN FACES THE WAR. 1940. New York, H. C. Kinsey. 183p. DLC:D811.5.D7.

Great Britain. Air Raid Precautions Dept. FACTORY VENTILATION IN THE BLACKOUT. (Factory form 301) 1940. London, H. M. Stationery Office. Available at British Library of Information - Rockefeller Plaza, New York, N. Y.

Great Britain. Air Raid Precautions Dept. LIGHTING RESTRICTIONS. (Circular 700225/114) London, 1938. February 14. London, H. M. Stationery Office. (Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y.)

Great Britain. Air Raid Precaution Dept. Re. ST. JOHN AMBULANCE AND BRITISH RED CROSS. (Circular 700271/19) (Available at British Library of Information. 50 Rockefeller Plaza, New York, N. Y.)

Great Britain. Air Raid Precaution Dept. ST. ANDREW'S AMBULANCE ASSOCIATION AND THE SCOTTISH BRANCH OF THE BRITISH RED CROSS SOCIETY. (Circular 3146) 1936. June 23, London, H. M. Stationery Office. (Available at British Library of Information, Rockefeller Plaza, New York, N. Y.)

Great Britain Air Raid Precautions Dept. COMMUNAL FEEDING IN WAR TIME. WOMEN'S VOLUNTARY SERVICES FOR CIVIL DEFENSE. 1940. London, H. M. Stationery Office, DLC:TX970.G7. Available at British Library of Information, Rockefeller Plaza, New York, N. Y.

Great Britain. Ministry of Health. (Circular 1794) AMBULANCE SERVICES. 1939, April 3, London, H. M. Stationery Office, Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y.

Great Britain. Dept. of Health for Scotland. AMBULANCE SERVICES. (Circular 24) 1939. May 18, London. H. M. Stationery Office. Available at British Library of Information. 50 Rockefeller Plaza, New York, N. Y.

Great Britain. Dept. of Health for Scotland. CLASSIFICATION OF SCOTTISH AREAS. (Government evacuation scheme memorandum E.V.V.3A) 1939, June, London, H. M. Stationery Office. Available at British Library of Information, 50 Rockefeller Plaza, New York, N. Y.

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Great Britain. Dept. of Health for Scotland. ORGANIZATION OF AMBULANCE SERVICES. (Circular 15) DLC. Document Division.

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Hampe, Erich. Der Mensch und die Gasgefahr. MAN AND THE DANGER FROM GAS. Berlin. 1936. 116(2)p. 21cm. DLC:UG630.H33.

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Ingersoll, Ralph M. REPORT ON ENGLAND 1940. New York, Simon and Schuster 202p. DLC:811.5.155.



Klatte, H. Luftschutzarbeiten im Hochbau. AIR RAID PROTECTION IN BUILDING CONSTRUCTION 1935. Potsdam, Ludwig, Vögelreiter Verlag. 41p. DLC:UG630.K55.

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Ley, Willy. BOMBS AND BOMBING. 1941. New York, Modern Age Books 121p. DLC:UG630.L46.

Lohrke, Eugene William, NIGHT RAID. 1941. New York. H. Holt and Co. 222p. DLC:PZ3.L8239.

Macmillan, D. N., ARP HAND BOOK 1939. Dundee, Simmath Press. 172p. DLC:UG630.M17.

Maxtone, Graham, Mrs. Joyce. (Anstruther) WOMEN OF BRITAIN; LETTERS FROM ENGLAND. 1941. New York, Harcourt Brace. 334p. DLC:D811.5.M3.

Meyer, J. Die Grundlagen des Luftschutzes. THE FUNDAMENTALS OF AIR PROTECTION. 1935. Leipzig, S. Hirzel. 328p. DLC:UG630.M42.

Michie, Alan A. "THEIR FINEST HOUR" FIRST NARRATIVE OF WAR IN ENGLAND. 1941. New York, 226p. DLC:811.A2H15.

New York, State Council of Defense. Bulletin No. 2 ENROLLMENT AND CONTROL OF AIR RAID WARDENS. 1941. Albany, N. Y. DLC. Document Division.

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New York State. JOURNAL OF MEDICINE AND SURGERY. New York, 1839. Quarterly, 23 $\frac{1}{2}$ cm. DLC:R11.N657.

Nicholson, Jane. Shelter; A NOVEL. 1941. New York, Viking Press. 241p. DLC:PZ3.N5227.

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Orne, Jerrod. REPORT ON THE PRECAUTIONARY MEASURES REGARDING ITS COLLECTIONS. Adopted by the Library of Congress 1942.

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